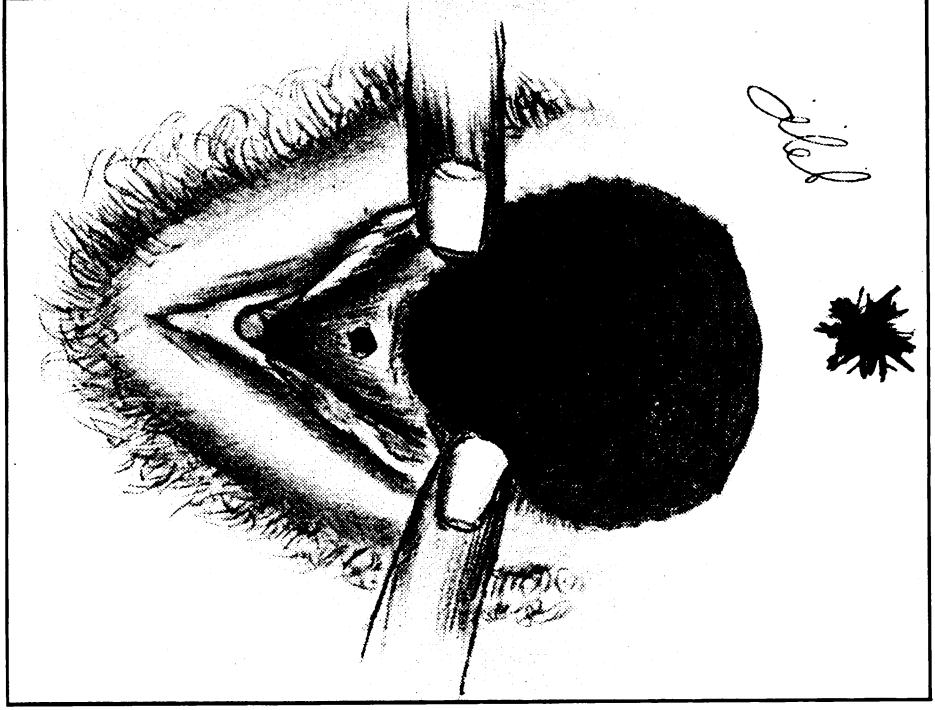

The operative treatment of prolapse and retroversion of the uterus

J. Inglis Parsons

THE OPERATIVE TREATMENT OF PROLAPSE AND RETROVERSION OF THE UTERUS.

The Operative Treatment of Prolapse and Retroversion of the Uterus

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PREFACE.

AFTER twenty years' work on the staff of a special hospital for women I venture to bring the results of my experience before my brethren of the medical profession.

This book does not pretend to be a compendium of all that has been done and attempted by others for Prolapse and Retroversion, but only what I have found by experience produces the best results.

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THE OPERATIVE TREATMENT OF PROLAPSE AND RETROVERSION OF THE UTERUS.

CHAPTER I.

Anatomy of the Pelvis in Relation to Prolapse.

(1) *The Pelvic Floor.*
(2) *The Uterine Ligaments.*

The uterus is held in position by its ligaments and the pelvic floor.

The pelvic floor consists of the soft parts filling in the outlet of the pelvis.

The most important of these are the levator ani and coccygeus muscles, which form a diaphragm with their attendant fasciæ, having openings for the rectum, vagina and urethra.

On the pelvic side these muscles are covered by fascia, connective tissues and peritoneum.

On the outer side, which is convex, they are reinforced by the following muscles: the transversi perinei, bulbo-cavernosi, and erector clitoridis; while the vaginal and rectal perforations are closed in respectively by the weak constrictor vaginæ and the powerful sphincter ani. Two other muscles indirectly assist the pelvic floor: the pyriformis, arising from the side of the sacrum and passing transversely outwards through the sacro-sciatic foramen, helps to fill in the posterior wall, and the obturator internus, which forms part of the lateral walls.

The fascia covering the latter muscle is of considerable importance, because it gives off at the white line the two

layers which sheath the visceral and parietal surfaces of the levator ani and coccygeus muscles. Further assistance is given by the deep layer of the superficial perineal fascia. It is attached on each side of the lower margin of the ischio-pubic ramus and to the ischial tuberosity; behind, it turns round the posterior border of the superficial transversus perinei muscle to fuse with the posterior border of the superficial and deep triangular ligaments; anteriorly, it becomes continuous with the fascial investment of the labia.

The perineal body may be said to form the central point of the pelvic floor. It is triangular in form, with its base turned outwards to the skin, and it fills in the space formed by the divergence of the vagina and rectum at ¾ to 1 inch from their terminations; vertically it measures from 1 to 1½ inches. It is made up of fibrous and elastic tissues and the muscular insertions of levator ani, transversi perinei, bulbo-cavernosi and sphincter ani. In size and consistence it varies very much, being very firm and hard in some women of the lower orders, while in others it may be quite thin, soft and small. The three tubes which pierce the pelvic floor, viz., the urethra, vagina and rectum, merely present slits in the pelvic diaphragm, their walls being in apposition, except in the temporary exercise of their functions.

The uterine ligaments consist of peritoneal, muscular and fibrous tissue. They are six in number—two lateral, two anterior and two posterior.

The ligaments lying between the peritoneal folds are four pairs: the round or utero-inguinal, the utero-ovarian, the utero-pelvic and the utero-sacral.

The broad ligaments are formed by a duplicature of peritoneum extending from the sides of the uterus and vagina transversely outwards to the sides of the pelvis. The two layers are continuous above and form the free border of the fold, but diverge laterally and below where they pass on to adjacent structures. The lowest point of coalescence is about an inch below the free border

and midway between the uterus and pelvic wall. The superior or free border is represented by the summit of the plication which turns round the oviduct and follows a sinuous course towards the side of the pelvis, its outermost extremity lying external to the fimbriated extremity of the Fallopian tube and forming a sharp fold —the infundibulo-pelvic ligament. The internal border is attached to the sides of the uterus and vagina, separated by a space for the uterine vessels and muscular bands. The inferior border is attached to the levator ani and recto-vesical fascia. The external border is bounded by the obturator fascia.

The most important structures contained within the broad ligament are: the ureter, the uterine artery and vein, the utero-pelvic band and the round ligament, and connective tissue.

The course of the ureter is of great importance. With the patient lying in the lithotomy position, it passes into the broad ligament from the sacro-iliac synchondrosis to the fascia over the obturator internus. It then turns partly inwards and upwards, making a curve like a bow towards the base of the bladder. When within ½ to ¾ inch from the cervix it pierces the uterine plexus of veins and is crossed above by the uterine artery. From this point it rises slightly and lies between the anterior vaginal wall and the bladder, and finally runs through the latter at an oblique angle.

The uterine artery runs in a downward direction along the pelvic wall as far as the base of the broad ligament, and then crosses horizontally to the cervix, where it rises somewhat, to cross above the ureter. It then makes a sharp bend and runs up the side of the uterus, giving off vaginal, vesical and numerous uterine branches.

The uterine veins form a plexus which accompanies the uterine artery, to end in the internal iliac vein. The size and extent of these veins have been much exaggerated. That they are capable of enormous dilatation and hypertrophy during pregnancy, and from the presence of large tumours, there can be no doubt. But to

imagine that this plexus of veins fills most of the broad ligaments is quite erroneous. At least half of the cellular tissue is quite free from veins of any importance. Luschka's diagram, quoted by most of the text-books on this point, is most misleading; possibly it was arrived at by forcible dilatation in the cadaver.

The utero-pelvic band consists of involuntary muscular and elastic fibres passing from the obturator fascia to become attached to the sides of the uterus and vagina.

There is also a quantity of loose adipose cellular tissue between these various structures and the peritoneum. It becomes denser and stronger near the uterine artery and veins, forming a resisting fibro-cellular bond between the uterus and the sacro-iliac articulation (Savage, "Surgical Anatomy of the Female Pelvic Organs").

The utero-sacral ligaments consist of two serous folds enclosing flat muscular bands, with loose connective tissue and vessels which run backwards from the intraperitoneal portion of the cervix uteri and vagina, one on each side of the rectum, to the sides of the sacrum opposite the lower border of the sacro-iliac synchondroses. They are closely connected with the muscular coat of the rectum and form the lateral boundaries of the pouch of Douglas.

The utero-vesical ligaments are two ill-defined folds of peritoneum which pass, one on each side, from the cervix uteri to the bladder.

The round or utero-inguinal ligament is about 5 inches in length, and forms a cord attached to the uterus just below the Fallopian tube. From these it runs forwards and outwards to the pelvic wall, enters the inguinal canal, emerges at the external ring, and spreading out becomes lost in the connective tissue of the labium majus. It consists of unstriped muscle with alveolar and elastic tissue. In the inguinal canal this is strengthened by striated muscular fibres, some of which are derived from the muscular walls of the abdomen. The artery which accompanies it is derived from the superior vesical, and anastomoses with the ovarian and uterine at the superior angle of the uterus.

CHAPTER II.

The Relative Value of the Pelvic Floor and Ligaments in Keeping the Uterus in Position.

In order to form a correct opinion on this point, we must first realise that women are not all alike, but differ from one another in this respect to a degree that can hardly be imagined by those who have not entered into the question.

Among the women of the lower orders we sometimes find a pelvic floor and perineum of great strength and toughness, which never relaxes in spite of repeated pregnancies and continued hard work. These women suffer much pain during parturition from the toughness of the pelvic floor and vaginal outlet, but they rarely suffer from prolapse. On the other hand, we often meet cases of relaxed vaginal outlet with the perineum reduced to a thin dilatable septum in married women, and sometimes single women who have not had a child, without any reason to account for their condition except congenital weakness of the pelvic floor.

The same variations are found in the strength of the uterine ligaments. A complete tear of the perineum may occur without any symptoms of prolapse, even after many years, because the uterine ligaments are so strong in some cases that they are able to keep the uterus in position even with a deficient pelvic floor.

Occasionally we see the converse of this. A single woman, aged 35, came to see me with prolapse. I found the cervix protruding from the vagina. In its descent the cervix had ruptured the hymen. It was the bleeding

from this that had frightened the patient and caused her to seek advice. In this case, although the perineum and pelvic floor were quite intact and gave all the assistance possible, the uterine ligaments were so weak that they gave way and allowed prolapse to occur.

These cases make it quite evident that the pelvic floor alone cannot keep up the uterus, whereas the ligaments alone are able to do so in *some cases*. On the other hand, a good pelvic floor is of great assistance in the prevention of prolapse, especially in women with only moderately strong ligaments that could not unaided sustain the uterus.

Relative Value of Ligaments.

According to Savage ("Surgical Anatomy of the Female Pelvic Organs"), the first ligaments to feel the strain on forcible depression of the uterus are the utero-sacral. When these are divided the uterus is still held up by the utero-pelvic band in the broad ligaments, also by the subperitoneal cellular tissue. The last of all to come into play being the round ligaments.

For some reason the value of the utero-pelvic band within the broad ligaments in holding up the uterus has not received due recognition by gynæcologists, although anatomists lay considerable stress on this point ("A Treatise on Anatomy," Henry Morris, p. 1104; "Researches on Female Anatomy," J. C. Webster, p. 88; "Surgical Anatomy of the Female Pelvic Organs," H. Savage, p. 69).

Even in the cadaver the broad ligament, with its enclosed utero-pelvic band, will hold up the uterus when all the other ligaments are severed.

My conclusions are: (1) That the pelvic floor alone, however good, will not keep the uterus in position if the ligaments have given way.

(2) That the pelvic floor when intact helps to sustain the uterus and is of great assistance when the ligaments are not very strong.

(3) That in some cases the ligaments are so strong that they are able to hold up the uterus without any assistance from the pelvic floor.

Normal Position of the Uterus.

When a woman stands erect the uterus, in its best position, will have the fundus inclined slightly forwards, and the body lying against the posterior wall of the bladder, while the cervix and external os look downwards

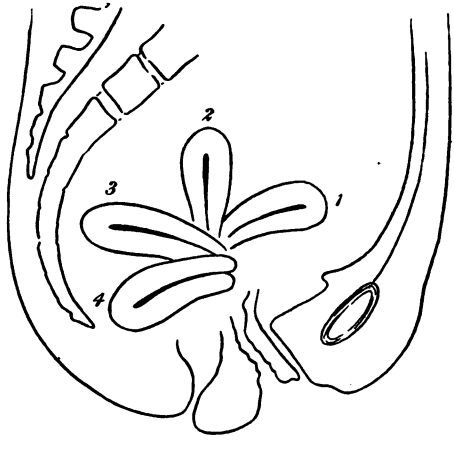


Fig. 1.—1, 2, show normal positions of uterus ; 3, 4, the first and second stages of retroversion.

and a little backwards. On making an examination with the patient standing the elevation of the uterus should be such that the index finger of average length will just reach the cervix if the patient is not abnormally fat. If the patient is told to strain there will be only the slightest movement downwards of the uterus and a slight bulge of the vaginal walls, both of which instantly disappear when the strain is taken off.

Since the bladder in front and the intestines behind are continually filling and emptying, Nature has endowed

the uterus with a considerable amount of normal mobility, so as to accommodate itself to these varying conditions without discomfort to its owner.

It might be asked, to what extent, then, is the mobility of the uterus normal? From clinical observation, I should say that any descent of the uterus, except what has been already indicated, is abnormal. But the antero-posterior position of the uterus can vary in health through fairly wide limits. It moves on its axis from a position of anteversion with an empty bladder, through an angle of 45°, so that in the standing position the cervix looks slightly forwards and downwards, and the fundus backwards a little upwards (see fig. 1). A line drawn from the upper margin of the symphysis pubis to the lumbo-sacral articulation just touches the fundus uteri in its best position of slight anteversion.

In addition to the normal position of the uterus in healthy women being one of anteversion, we also find in nearly half of them a slight anteflexion. This occurs at the junction of the body to the cervix. It is not enough to cause any obstruction to the sound in the uterine canal, and gives rise to no symptoms. The obtuse angle thus formed is mostly 150°, but may range between that and 135°. Any angle more acute than that begins to pass the line between normal and abnormal conditions, and sooner or later gives rise to symptoms.

CHAPTER III.

General Causes of Prolapse and Retroversion.

A large majority of patients date their symptoms from their first or second confinement. A laceration of the perineum takes place, the subinvoluted uterus weighs more than normal, and this, added to the diminished support of the pelvic floor, and aided very often by the general weakness incidental to child-bearing, produces stretching of the uterine ligaments. The larger proportion of these cases, found among the lower orders, is due to their having to get up much sooner than the well-to-do, before involution has had time to occur. It very often happens that after a laceration the anterior vaginal wall begins to protrude from want of support by the perineum. Unless attended to it becomes worse and finally the uterus and posterior vaginal wall become prolapsed.

There are also a great many cases where the whole pelvic floor becomes relaxed, without any laceration of the perineum. If the patient is told to bear down the pelvic floor can be seen to descend for an inch or more (see fig. 2).

Another condition sometimes combined with the above, in others occurring alone, is relaxation of the vagina, and particularly of the vaginal outlet, without laceration of the perineum. This may be so distensible that nearly the whole hand can be passed into the vagina. When the patient strains the vaginal walls roll down and commence to protrude, dragging the uterus after them; or the posterior vaginal wall comes down alone, causing retroversion. This latter condition is frequently due to chronic constipation.

In rare instances the anterior vaginal wall forms a *cystocele* without any laceration or relaxation of the vagina, and without any prolapse of the uterus. This is probably due to over-distension of the bladder. Prolapse also occurs from the uterine ligaments giving way, even when the pelvic floor is intact and quite firm. That excessive exertion and straining, by raising the intra-abdominal pressure, is sometimes the cause in such cases

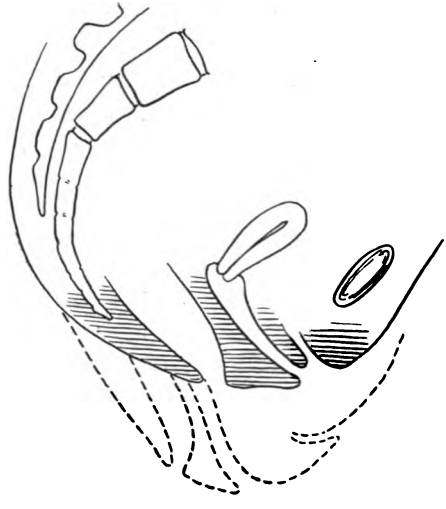


FIG. 2.—Diagram showing abnormal descent of pelvic floor on straining.

I am ready to admit, but in a great many cases the ligaments are not strong enough to bear the ordinary strain which the working woman has to put on them in order to carry out her ordinary duties.

Tight-lacing is a frequent factor in the causation of prolapse and retroversion, by compressing the contents of the abdomen, and forcing them to expand in the direction of least resistance; this direction being the vaginal outlet in the pelvic floor.

Riding in moderation, by improving the general tone, does quite as much good as harm.

With regard to cycling and riding, I am convinced that when done in moderation, the increased circulation through the pelvis tends to strengthen the ligaments; on the other hand, if steep hills are ascended and too long a distance for the patient's strength is ridden, actual prolapse may be produced.

After parturition the ligaments sometimes fail to undergo involution and remain in a relaxed condition. This is frequently associated with subinvolution of the uterus, the extra weight of which tends to increase the displacement.

This brings us to another important factor in causation, namely, enlargement of the uterus from various causes. Subinvolution and chronic metritis are the most common. When, however, the enlargement is caused by fibroid tumours it is rare for prolapse to occur. In fact, the broad ligaments appear to hypertrophy with the growth of these tumours, just as they do in pregnancy.

Retroversion is, however, fairly common from the presence of fibroid tumours in the fundus.

The enlargement of the uterus due to pregnancy is responsible for a small number of cases of prolapse during the first three months.

Various tumours in the pelvis may force the uterus down or cause retroversion. A bimanual examination would at once reveal this.

The general health must not be overlooked as a cause. There are a great many women on the borderland of prolapse. As long as they are in good health and the muscular strands in the uterine ligaments are in good tone the uterus keeps up; while a week or two of late nights and bad air consumed in the pursuit of so-called pleasure bring on all the symptoms of prolapse.

One of the remote causes of prolapse and retroversion is probably due to evolution. According to Darwin the general structure of the body was evolved before woman

attained to the erect position. Any anatomist can see at once how impossible it is for the uterus to prolapse or get out of place in the quadrupedal position. With

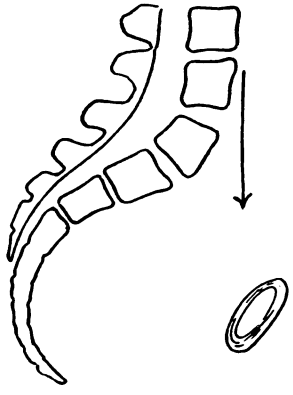


FIG. 3.—Inclination of pelvis forwards, bringing downward pressure more on to pubes, and less on the pelvic organs.

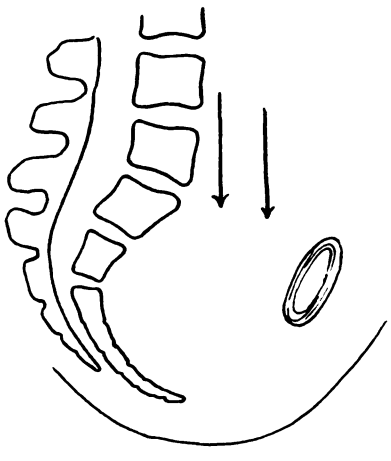


FIG. 4. — Shallow pelvis, allowing downward pressure on pelvic organs.

the heavy fundus hanging down gravity keeps it in position, and it is supported below by the abdominal wall. If the perineum is ruptured the drag of the uterus

on the vaginal walls tends to draw it together, whereas in the erect position every ligament acts at a disadvantage, while the vagina in particular, instead of forming a strong suspensory ligament, merely acts as a weak supporting column. If the perineum is torn, the uterus pressing down tends to exaggerate the evil.

However much care the practitioner may give to his patient after parturition, and however long he may keep her in bed, he will still find, in spite of all his precautions, some of his patients will suffer from prolapse. The reason is that many women are not very strong, and with the erect position they have always been on the borderland of prolapse, with no margin to spare.

Another factor in the causation of prolapse and retroversion is the position of the pelvis in relation to the vertebral column. With a normal curve in the lower half of the spine the pelvis is inclined backwards, so that most of the downward intra-abdominal pressure is exercised on the pubes (see fig. 3).

In some women this curve in the vertebral column is less than it should be, with the result that any downward pressure on exertion is exercised on the pelvic organs, and tends to produce prolapse (see fig. 4). A shallow, wide pelvis also favours prolapse in comparison with the deep and rather narrow shape.

CHAPTER IV.

Prolapse of the Uterus; Causes, Varieties, Symptoms, Diagnosis, Treatment.

The general *causes* of this condition have been already discussed (see p. 9, chap. III.). What is not generally recognised in regard to prolapse is the enormous difference between one woman and another. For instance, I have seen the uterus protrude from the vulva and rupture the hymen in a virgin with an absolutely intact and strong pelvic floor. The uterine ligaments in this case were manifestly very weak. In another case the converse of this occurred, and the ligaments were so strong that the uterus had kept up in spite of a complete laceration of the perineum that had existed for years. We can see from this that there are enormous differences in the strength of the uterine ligaments, dependent in all probability on heredity. A large number of women of the present day are able to keep up the uterus so long as they remain single and in good general health. At the same time, they are always on the borderland of prolapse, and any severe muscular strain, like cycling long distances or going up steep hills beyond their strength, will bring on symptoms. As soon as they marry and have a child, prolapse occurs.

With these patients the uterine ligaments under ordinary conditions can keep up the uterus, with the assistance of the pelvic floor and good general health. But as soon as debility is induced by the physical exhaustion following childbirth, relaxation takes place even if the perineum is intact. When there is also a laceration

of the pelvic floor the prolapse is worse. It becomes quite evident under these conditions that repair of the pelvic floor alone will not cure the prolapse, although it does good.

Pathological Anatomy.

It is usual to speak of three degrees of prolapse for the sake of convenience in description: The first degree when the uterus descends, but does not protrude from the vagina; the second degree when part of the uterus shows outside the vulva and is called "procident"; third degree, when the whole uterus is outside. The patient is then said to have "procidentia" (see fig. 5).

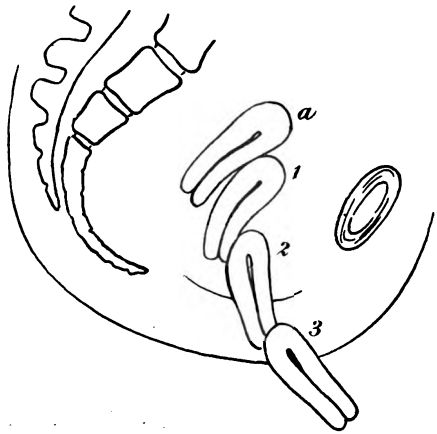


FIG. 5.—1, 2, 3, the three degrees of prolapse; *a*, normal position of uterus.

In addition to the degree of prolapse of the uterus we also have to take into consideration the part taken by the surrounding structures in connection with it.

At the beginning of the *first stage*, relaxation of the utero-sacral ligaments allows the fundus to fall back while the vesico-uterine folds are stretched. Should the mischief go no further, retroversion is the result, but if

this is followed by relaxation or stretching of the utero-pelvic bands on each side within the broad ligaments, descent then takes place, and may be quite independent of the condition of the pelvic floor.

In those patients who have fairly strong uterine ligaments the prolapse will not come on this way, but will only occur after a rupture of the perineum, or a general stretching of the pelvic floor, which may be associated with a dilated vaginal outlet, without laceration of the

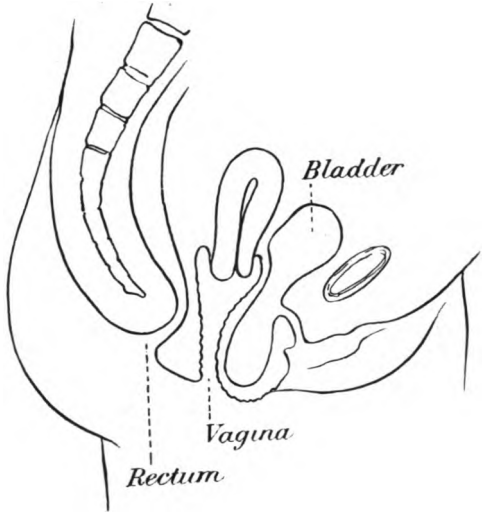


FIG. 6.—Cystocele without prolapse of the uterus.

perineum. Under these circumstances the first to descend is the anterior vaginal wall, from want of its natural support by the posterior vaginal wall and perineum. Intra-abdominal pressure and a distended bladder increase the effect, and what is called a "Cystocele" is formed and protrudes through the vulva after a time. This swelling in nearly every case contains part of the bladder. As soon as a cystocele begins to form a down-

ward pull is exerted on the uterus, after a time the ligaments stretch and prolapse begins.

Very rarely the bladder becomes separated from the uterus and vagina and is left up in the pelvis.

A cystocele may also form without producing prolapse, when the uterine ligaments are very strong, and in exceptional cases is found in multiparous women without laceration or relaxation of the vaginal outlet (see fig. 6).

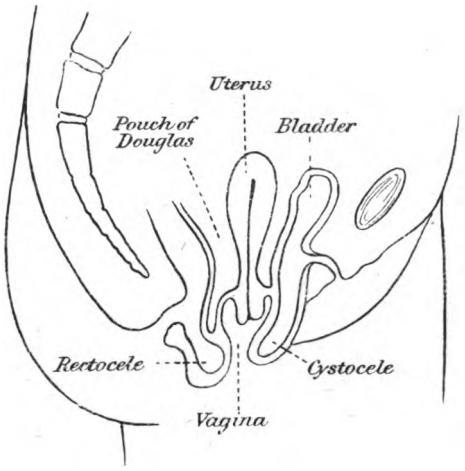


FIG. 7.—Supravaginal elongation, caused by prolapse of the vaginal walls, while the fundus is held up by the ligaments.

The posterior vaginal wall seldom comes down first, although this may occur in rare cases when the perineum is torn through. As a rule, it is secondary to the prolapse of the uterus. The swelling often contains a diverticulum of the rectum, and is therefore called a "rectocele." Sometimes after laceration of the perineum both vaginal walls protrude on straining without much descent of the uterus. On account of the comparatively loose attachment of the cellular tissue between the vagina and the rectum, the former in many instances comes

down without taking the rectum with it, whereas a cystocele nearly always contains a part of the bladder.

When the *second stage* has been reached there is generally a cystocele and rectocele (see fig. 7). The urethra is bent downwards as the bladder descends and may set up retention. It is very necessary to bear in mind the possible separation of the rectum from the vagina, because Douglas' pouch and small intestine may descend between the two and cause trouble during an operation. The same thing may occur between the vaginal wall and the bladder, but it is much more rare.

The *third stage* is reached when the uterus is found outside the vulva with the vaginal walls everted. In most instances the latter come down first, the uterus follows after, and is found lying in a retroverted position.

Changes in the Uterus.

The uterus is always enlarged when prolapse has reached the second degree. The starting point of the displacement may have been due to the extra weight of the uterus from subinvolution or chronic metritis. Even when the uterus is normal in size to begin with, it very soon enlarges as a result of the chronic congestion produced by the prolapse. The enlargement is most marked in the vaginal portion of the cervix. It resembles a thick mushroom before it has opened out. The length of the uterus is also increased. This enlargement and hyperplasia of the uterus is of course more marked in the third degree.

Descent of the Pelvic Floor without Prolapse of the Uterus.

When a healthy woman bears down there is always some descent of the pelvic floor, which is quite normal, but it varies in different women between $\frac{1}{3}$ and 1 inch. As soon as the strain is removed the elastic con-

dition of the tissues carries it up again. Under abnormal conditions of ill-health and malnutrition the whole pelvic floor will sometimes come down as much as 2 or 3 inches on straining, with but little or no descent of the uterus (see fig. 2).

Associated with this condition is that known as "*supravaginal elongation of the cervix.*" This is produced by the drag on the cervix of the descending vaginal walls and pelvic floor while the fundus is

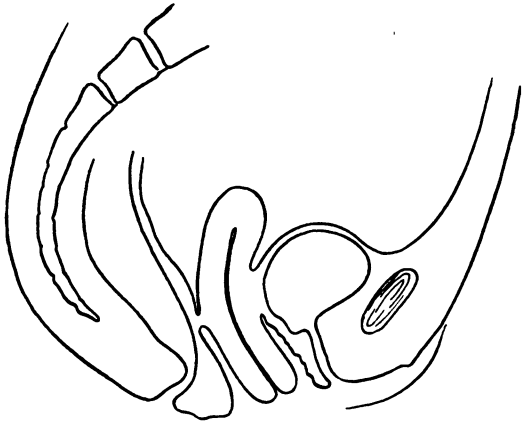


FIG. 8.—Vaginal hypertrophy of the cervix simulating prolapse.

kept up more or less by the uterine ligaments. That portion of the cervix which is just above the vaginal walls becomes stretched and elongated sometimes to a very marked extent. The sound may pass as much as 5 or 6 inches, and while the cervix is protruding from the vulva the fundus may be found almost or quite as high as normal in the pelvis (see fig. 8). Such cases are, however, not common. So far as my experience goes, in quite 95 per cent. of all cases both the ligaments and the pelvic floor have given way; the cervix is found much enlarged laterally, but not much elongated, the body of the uterus is also enlarged by chronic con-

gestion and hyperplasia, the sound passing $2\frac{3}{4}$ to $3\frac{1}{2}$ inches.

Hypertrophy with lengthening of the infravaginal portion of the cervix is found occasionally in virgins. It appears to be a congenital condition. The extra length of the cervix simulates prolapse, while the extra weight of the uterus does, as a fact, usually cause some descent of the fundus.

Symptoms of Prolapse.

The *symptoms* of prolapse are more marked in the early than the later stages. As soon as the uterine ligaments begin to stretch the patient suffers from pain in the back low down at the junction of the sacrum to lumbar spine. She usually feels a bearing-down pain within the pelvis, which is worse on walking or standing, and relieved by lying down. Many complain of pain in the left ovarian region as well. The bladder is sometimes irritable, with frequent micturition. Young unmarried women may have slight metrorrhagia. It is in the early stage that prolapse is most likely to be overlooked. Many patients, if examined lying down and told to force down, show little or no sign of prolapse, but if the examination is made while the patient is standing, the uterus is found to come down a little lower than normal. In 1902 I saw a patient with Dr. Burt who complained of irritable bladder and had no other symptoms. Mr. Hurry Fenwick had examined the bladder and found it normal. On examination I found incipient prolapse of the uterus. A pessary was fitted, and in forty-eight hours the patient's symptoms had vanished and have never returned.

In 1900 a patient of Dr. P. Whitcombe came to me with bearing down, but no pain in the back, and no bladder trouble. She was aged 24, and had one child. The pelvic floor was intact. It was only by examining her standing that the early commencement of prolapse was diagnosed. A pessary relieved her symptoms at once, and after wearing it for twelve months she was

cured. In all doubtful cases, when the patient has symptoms of prolapse she should be examined standing, and if she is told to bear down as much as possible, whatever the degree of prolapse it will be revealed. At the same time, any bulging of the vaginal walls or general drop of the pelvic floor should be noted.

In order to succeed in the treatment of these cases it is highly important to form an accurate opinion as to whether the pelvic floor or the uterine ligaments are most at fault, or whether as often happens, both have given way.

When the perineum has been ruptured the most common condition is to find protrusion of one or both vaginal walls, with slight descent of the uterus. Most frequently it is the anterior vaginal wall alone that bulges. In quite a small proportion of cases this may occur alone without any descent of the uterus, and even in multiparous women with an intact perineum.

In the second and third stages the protrusion of the uterus is self-evident. There is nearly always complaint of bladder trouble, chiefly a difficulty in emptying it. Very often the patient is unable to do this until she has pressed up the uterus. A certain amount of cystitis may be present, from retention of urine, but it is rare for this to be severe, even in the worst cases. The patients may complain of backache, but not so much as in the first stage. They nearly always have a bearing down or sinking feeling, and are unable to walk much or do any sustained work.

The cervix is found to be enlarged and usually covered with erosion, while profuse leucorrhœa is present. The lower the uterus and the longer it has been down the more marked are these symptoms. Added to this there may be actual ulceration of the cervix in such a condition of neglect that it might be mistaken for an epithelioma. The vagina undergoes certain changes in chronic procidentia. It is usually much dilated and larger than normal, the rugæ are lost, the epithelial surface loses its mucous character and becomes hard and horny.

Diagnosis.

There is no difficulty in making a *diagnosis* except in the early stage. An inverted uterus might be mistaken, or a polypus hanging down from the uterus, or a cyst or other tumour in the vagina. The presence or absence of the external os will determine whether the swelling is the uterus or not. Three conditions have to be distinguished: Prolapse from (1) giving way of the uterine ligaments; (2) from laceration or relaxation of the pelvic floor; (3) a combination of both these; (4) elongation of the supravaginal cervix, in which prolapse is more apparent than real.

If a patient with symptoms of prolapse is found on examination to have the uterus in position and an intact perineum, she is probably suffering from descent of the pelvic floor. When lying on her side the perineum can be observed as a groove between the buttocks descending slightly during inspiration. Under normal conditions a strong bearing-down effort will cause a descent of ½ to 1 inch, but when there is undue relaxation of the pelvic floor this may extend to two or more inches. This condition is not nearly so common as the other forms of prolapse.

The cases most likely to be overlooked are those of incipient prolapse, where the descent of the uterus is slight, unless the patient is examined while standing, and told to bear down as much as possible.

Treatment.

Success in treatment will depend upon an intelligent appreciation of the actual condition of the patient. If, for instance, the prolapse is due to a giving way of the uterine ligaments, a tear in the perineum, sewing up the latter will not cure the patient, although it will do good. There are three principal methods of treating patients, viz., *medical*, *mechanical*, and *surgical*.

General Relaxation of the Pelvic Floor without Rupture of the Perineum.

The artificial conditions of modern civilisation enable a great many women to survive and bear children who have little or no constitution. They very often are too weak or incapable of suckling their first child. The effort to reproduce their species has exhausted them, and although the perineum is not torn, the whole pelvic floor is found relaxed and very often the uterine ligaments as well. Anæmia is very often present in these cases.

Every effort should be made to raise the general health. Iron should be given to combat the anæmia for some months. The prescription which I find of most service is the following:—

℞ Ferri and ammoniæ citratis	gr. v.
Spiritus chloroformi	♏ x.
Tinct. calumbæ	ʒi.
Aqua. ad.	ʒi.

Three times a day after food.

A cold hip-bath every morning, followed by a brisk rubbing with a rough towel, is an excellent tonic. Fresh air, plain food, and early hours should be enjoined. Any tendency to constipation must be most carefully corrected. The choice of aperient will depend on the type of case, but for most patients there is nothing to equal cascara sagrada combined with a little hyoscyamus and oil of peppermint, to prevent griping. A glass of good burgundy, port, or stout in non-gouty patients does much good. Astringent vaginal douches help matters. That which I prefer consists of two parts of alum to one of sulphate of zinc; a drachm of this is added to a quart of tepid or cold water and used morning and evening. During menstruation the water must be hot instead of cold, and the patient should also keep her feet up. In the intermenstrual period she can go out in a bath-chair or a carriage, but must not stand or walk much. On account of the general relaxation of the tissues pessaries are not of much service at first. The vaginal walls

have no grip, and the pessary will be found to descend on straining with the pelvic floor and uterus. What is of some service is a perineal pad attached in front and behind to an abdominal belt. An ordinary diaper with a pad applied in the same way as during menstruation, rather tightly, answers the same purpose almost as well.

The Early Stage of Prolapse of the Uterus, without Laceration of the Perineum.

This condition is not uncommon after the birth of the first child, but it may occur at any time from an overstrain, especially if this should occur when the general health is below par. Many of these patients are only on the borderland of prolapse. When they are sent to a bracing place, and lead a normal life, their symptoms go away in a few weeks, but only to return as soon as the unhealthy environment of city life is resumed; or the weakness may only be present as long as the patient remains delicate from the exhaustion following parturition.

This early stage in prolapse of the uterus is very liable to be overlooked, because it cannot be detected unless the patient is examined standing.

A well-fitting pessary gives immediate relief. It takes the strain off the uterine ligaments and gives them a chance of recovering their tone. With most of these patients nothing more is necessary beyond attention to the general health, such as I have described. At the end of a few months or a year the pessary can usually be left off and the patient is restored to health. Whenever a patient is wearing a pessary she should be told to use an astringent, or if necessary an antiseptic, douche daily, and also that the pessary must be taken out every month or two months and thoroughly cleaned.

The Choice of a Pessary.—This will, of course, depend upon the case. To attain anything like success in fitting a pessary the surgeon must form an accurate opinion of

the shape of the vagina. In the virgin the upper end is much larger than the lower. When there is laceration of the perineum or relaxed vaginal outlet the reverse of this may obtain. In between these two extremes any number of variations exist.

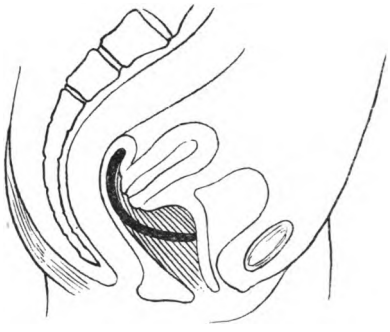


FIG. 9.— Showing the author's pessary in position for cystocele. The cross-bar which prevents the vagina coming through cannot be seen in this position.

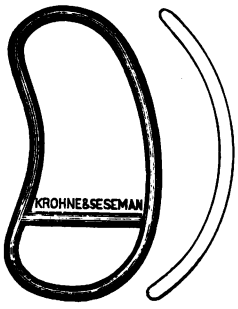


FIG. 10.—The author's pessary for prolapsus uteri. The cross lies in front of the cervix and holds up anterior vaginal wall.

The various shapes of pessaries evolved by ingenious minds are legion. I very rarely use more than four, viz.: (1) The india-rubber ring; (2) the vulcanite Hodge; (3) my own metal (see figs. 9 and 10) pessary, or Dr. Galabin's for prolapse; and (4) the vaginal cup and stem

made of rubber and attached by four straps to a belt round the waist (see fig. 11).

The perfect pessary does not exist. What we want is a material as resilient as india-rubber and at the same time impermeable to discharges and incapable of decomposition.

The most useful pessary all round is the india-rubber ring, either made solid or containing a watch-spring. For the condition described as early prolapse this is the

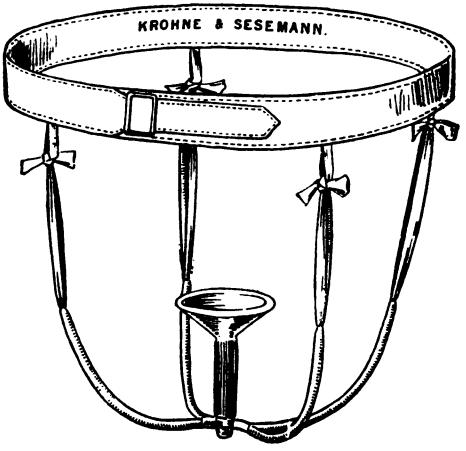


FIG. 11.—India-rubber vaginal cup and stem pessary, with tapes and waist-band.

pessary *par excellence*. When properly fitted the patient should not be aware of wearing anything. The capacity of patients for wearing pessaries varies very much. Some can bear any sort, however rigid, while others are so sensitive that they can scarcely tolerate anything, even a soft india-rubber which fits to perfection. Whenever india-rubber is used in any form as a pessary the patient should be directed to use an antiseptic douche daily, and two or three times a day for a day or two immediately after menstruation. If this is not done the india-rubber, with some of the retained discharges, undergoes decom-

position, from the multiplication of various microbes, and vaginitis, with profuse discharge, is set up. Whatever pessary is worn, the patient requires to use the vaginal douche once a day. Directions should also be given to come once a month to have the pessary taken out and cleaned, if india-rubber is used. Vulcanite or metal can be left longer, for two or even three months in some cases. Unless this is done a pessary may cause ulceration, especially if it fits badly, and may finally become imbedded in the vagina, with serious results to the patient.

The next most useful pessary is the Hodge, made either of vulcanite, celluloid, or soft metal. These are particularly useful when there is retroversion associated with prolapse. Of the three materials, vulcanite is the best, but more difficult to mould, as it almost requires to be boiled before it becomes pliable. Celluloid answers very well and becomes pliable in ordinary hot water. Soft metal is the most convenient of all, as it is readily bent into any shape without heat.

It very often happens that the pessary which fits well at first is too big after a few weeks. With improvement in general health and locally under treatment the vagina contracts up to a size more approaching the normal. A smaller pessary then becomes necessary. On account of this a good method is to begin by fitting a soft metal Hodge, and to have this copied in vulcanite when the permanent size has been attained.

An important point is to see that the bars of the pessary are fairly thick. By this means the pressure is distributed more equally and the pessary keeps in better position, because it has more grip of the vaginal walls.

A great deal of nonsense has been written against the use of pessaries, chiefly by physicians or surgeons who have had no experience in their use. With a very large experience I have never seen any harm result from them in the hands of those who had studied the subject. Want of experience and skill in the use of pessaries may, of course, do harm, but the same argument also applies to

the knife with much greater force, but that is no reason for giving up surgery.

Under modern conditions and in skilled hands the risk of operations is so little that pessaries are much less required than formerly. On the other hand, there are many timid women who will never submit to any operation, unless it is to save their lives, and sometimes not even then. For such cases of severe displacement pessaries offer the only relief possible under the circumstances. In many cases the relief is undeniable, one might say it is sometimes the most remarkable result that can be obtained in the whole of medicine or surgery. I have known patients in the first stage of prolapse, but with an intact perineum, suffer constant pain and become quite useless members of society for months or years. As soon as a ring pessary has been fitted they obtain relief, and this is often complete in the course of a few weeks. The same may be said of uncomplicated retroversion.

When harm results from the use of pessaries it is due to one of two causes—either the pessary does not fit and ulceration, with septic absorption, occurs, or else a wrong diagnosis has been made.

Of the multitude of other pessaries, one which is sometimes very useful is Galabin's anteversion pessary. It is very useful for cystocele and prolapse. The hard vulcanite ring has not, in my opinion, much value; if large enough to keep up the uterus it is, on account of its rigidity, painful to introduce, and for the same reason often causes pain to the wearer. I have seen extensive parametritis caused by a large vulcanite ring.

Prolapse of the First Degree, with Rupture of the Perineum.

This group includes more patients than any other. In order to treat them with success we must recognise two main factors, the loss of support from the torn pelvic floor, and the giving way of the uterine ligaments. The general health always requires attention as well (see p. 23).

The relation which these two factors in the case bear to one another may vary through wide limits. For instance, the tear in the perineum may be very severe, with considerable protrusion of the vaginal walls, while the uterus only comes down slightly. Under these circumstances repair of the perineum is strongly indicated. It should not be undertaken until three months after the birth of the child, and in some cases even later, so as to enable the mother to pick up her strength. The child should be weaned and lactation stopped. If the operation is well done the drag of the vaginal walls on the uterus ceases, the ligaments recover their tone, and the prolapse is for the time cured. (See p. 43 for operation of perineorrhaphy.) When, however, the tear in the perineum is not very great and we find on straining that the descent of the uterus is well marked, we have a different problem to deal with. In such a case the fault lies more with the uterine ligaments than it does with the pelvic floor. If we repair the perineum the patient will be better, and she will be able to retain a pessary, but the prolapse will not be cured. In fact, it very often will happen that the uterus coming down forces the pessary with it, and stretches the vaginal outlet so much as to nullify the results of the operation.

In order to meet this defect in the treatment of prolapse the operation of ventrofixation, or attaching the uterus to the anterior abdominal wall, was introduced. Unless the prolapsus is well marked the operation is not needed, if it is well marked the uterus has to be firmly fixed to the abdominal wall, otherwise it comes away again. As a result of this firm fixation the uterus does not expand easily when pregnancy occurs, and various troubles arise from this cause.

When the operation is done for the second or third degree of prolapse, the drag on the abdominal wall is so great that it is pulled down into a pouch. In many instances the uterus comes away altogether in spite of numerous sutures, and may even leave a ventral hernia

behind. These objections do not hold in regard to the operation of ventrosuspension for slight prolapse associated with retroflexion. The uterus is only held by one or two silk sutures which are absorbed in time, and the adhesions which are left behind are capable of stretching when pregnancy occurs, and do not offer the same resistance as the extensive surface attached in ventrofixation. This has been demonstrated by Kelly, and my own experience bears out his statements. In most of the published records in regard to these two operations the results have been lumped together, but in order to arrive at the truth it is necessary to separate ventrosuspension from ventrofixation. In order to fill the void, and particularly for those women still capable of having children, I invented the operation of strengthening the uterine ligaments by the injection of quinine.

Just as the structure of the body arrived at by evolution is in some respects imperfect, so also are the physiological functions also slightly imperfect in some respects. The reason for this is that these functions were evolved *pari passu* with the structure of the body in distant and remote ages long before the existence of even our Simian ancestors. The explanation of several problems in medicine and surgery is to be found in the study of the prehistoric being who eventually developed into man, or in this case woman.

Now, one of the imperfections in modern woman is the faulty position of the uterus and the mechanical disadvantage of the uterine ligaments. When a woman is in the knee-elbow, or what used to be in remote ages the quadrupedal, position, all this is reversed. All the uterine ligaments and the vagina act at their best, and it is almost impossible for the uterus to get out of position.

Another imperfection is the failure to repair the uterine ligaments in a very large number of patients when the ligaments are stretched beyond a certain point.

When dislocation of a joint takes place it is nearly

always followed by repair, and in the majority of cases the repair is so good that the joint is as strong as ever. In fact, Nature not unfrequently over-repairs a joint, and causes impairment of its movements by adhesions. The swelling which takes place soon after the injury contains the materials which do the repairing.

When the uterus is dislocated the process is usually so gradual that there is never at any one time sufficient stimulus to cause the effusion of lymph necessary to produce repair.

It occurred to me that if this stimulus were applied to the utero-pelvic band within the broad ligament by means of some irritating solution, an effusion of lymph would take place without any rise of temperature, and repair would follow.

The choice of a solution that should be antiseptic, non-poisonous, and yet irritating enough, presented some difficulties. My friend Dr. J. Aikman, of Guernsey, suggested to me the use of sulphate of quinine, because it was found to cause a swelling when injected into the cellular tissue of the arm for malaria. For the first case I used a solution of 1 in 4; the sulphate of quinine being dissolved in equal parts of distilled water and dilute sulphuric acid (B.P.). This strength caused a few drops of pus to form, so the solution was altered to 1 in 6. This was too weak. I now use in every case a strength of 1 in 5. The prescription is as follows:—

℞.	Quininæ sulph.	gr. xii.
	Acid sulph. dil.	♏ xxx.
	Aqua distallata	ad ʒi.

It is necessary to have this amount of acid, because the quinine will not keep in solution without it, particularly in cold weather.

The Author's Operation on the Broad Ligaments.

The patient is prepared by giving an aperient the night before, followed by an enema in the morning. It

is very important to clear out the bowel thoroughly. After the enema has acted, the bowel is washed out with a pint and a half of chinosol solution, 1 in 5,000.

An anæsthetic is not absolutely necessary, but is certainly preferable. I have done six cases without anæsthesia, some of them felt nothing and the others said they wished they had been anæsthetised.

The vagina should be thoroughly douched three times a day for two or three days before the operation with hydrarg. perchloride 1 in 2,000, and also when the patient is on the table.

The lithotomy position is the best, with the knees separated by Clover's crutch. A sound is passed into the bladder so as to define its position and limits. This is very important in a case of chronic procidentia, where the bladder is liable to be displaced. The most usual displacement is lower than usual, in the lithotomy position, forming a pouch on each side of the cervix. Sim's speculum is now introduced so as to draw down the posterior vaginal wall. A retractor is passed in and the anterior vaginal wall is lifted up. Both these are held by an assistant; as a rule this is sufficient to expose the cervix and the lateral fornices. But it sometimes happens in chronic cases the vagina is so much dilated that the lateral walls bulge inwards and obscure the view. Two lateral retractors are then required in addition. The sound is passed into the uterus so as to find its direction. It is then withdrawn, and a straight, strong probe or sound, with the last three inches wrapped with cotton-wool, is introduced up to the fundus and held horizontally (see figs. 12, 13 and 14). In this position the base of the triangle formed by the two layers of the broad ligament is towards the operator, and is from 1½ to 2 inches wide on each side of the cervix, both vertically and laterally.

The probe is held by the left hand of the operator horizontally, while the syringe (for description see p. 35), is held in the right hand. It is passed over the probe

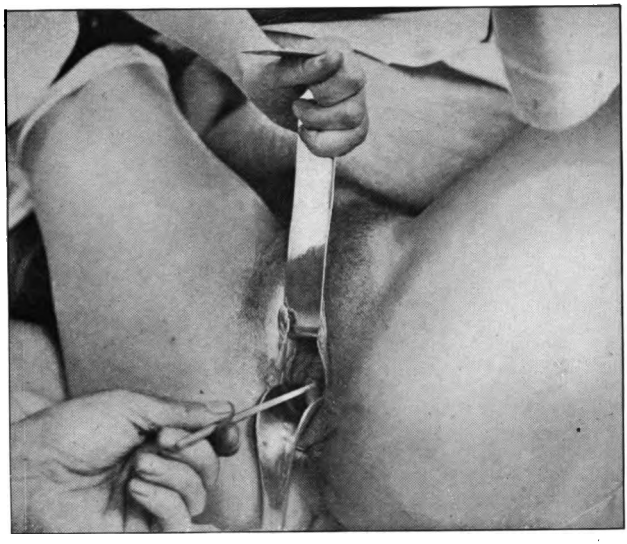


FIG. 12.—Author's operation. Passing the straight sound into the uterus.

FIG. 13.— Author's operation. Making the injection. Note the syringe is directed a little downwards and outwards.

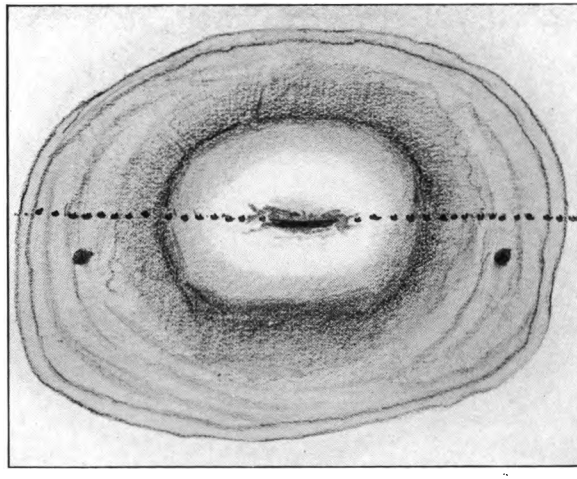


FIG. 14.—Author's operation. Showing the two spots for puncture through vagina on each side of the cervix below the horizontal line. Patient in lithotomy position. Life size.

FIG. 16.—Author's operation. The india-rubber vaginal stem pessary in position. This keeps the uterus up while the effusion is forming.

and thrust through the vaginal walls to a depth of 1 inch external to the cervix, slightly downwards and outwards. The point of puncture is ¾ inch from the edge of a cervix normal in size (see fig. 14). When the cervix is much larger, as one often finds in chronic prolapse, the point of puncture comes proportionately nearer to it. The object of directing the needle downwards slightly so as to puncture below the level of the external os is to

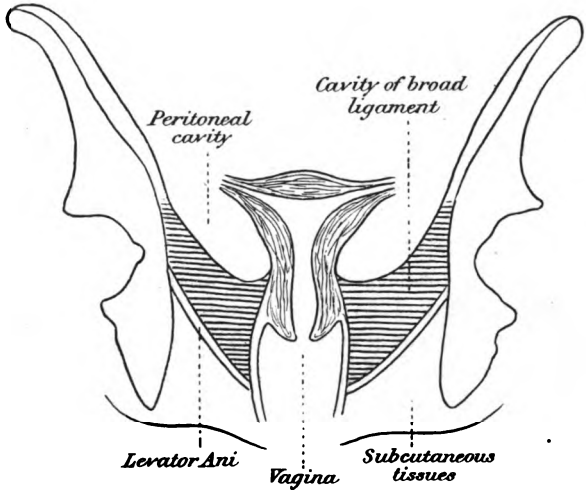


FIG. 15.—Section of the pelvis, showing the space in the broad ligament injected with quinine.

avoid the ureters and bladder when they are lying below their proper level. After the puncture has been made the operator should, with a rotary motion of the syringe in his right hand, ascertain if the point is free. The needle point should now be in the utero-pelvic band near the centre of the broad ligament, lying below the ureter and outside the uterine artery (see fig. 13). The solution (for quantity see p. 34) is now injected slowly with the needle kept in the same position. As soon as finished,

the syringe is withdrawn smartly so as to prevent any escape of the solution down the track of the needle. Then the other side is done in the same way.

The probe, speculum and retractor are removed and the operator proceeds bimanually to place the uterus in a position of anteversion. While holding the fundus in position with the left hand he introduces the vaginal cup and stem pessary (see fig. 16), while the four tapes attached to it are tied by assistants to the band already placed round the waist.

It is *most important to see that the pessary is properly secured.* Unless this is done the uterus may come down and be fixed in a bad position instead of a good one. The ordinary cup and stem pessary made of rubber answers well enough for prolapse of the first degree, but when we are dealing with a case of chronic procidentia it is necessary to have the stem stiffer than those usually made, so as to resist the strong expulsive efforts which so often follow an anæsthetic. It is also necessary to have the cup in several sizes to fit a small or dilated vagina, and thus prevent the cervix from slipping to one side and coming down (see fig. 11, p. 26).

These modifications have been carried out for me by Krohne and Sesemann.

Quantity of Solution Used.—This will vary under different conditions. The same solution is always used (for composition, see p. 31). There is considerable difference between the reaction of one patient and another. A strong, ruddy woman requires a smaller quantity than the pale, worn-out mother of a large family. The maximum quantity is 1 dram for the left broad ligament and 70 drops for the right side. I began at first with 30 minims and gradually increased it.

The reason for injecting less of the solution on the left side is because the space between the layers of the broad ligament is encroached upon by the rectum. I have found by experience that the reaction on the left side is usually more than on the right.

The *syringe* (see fig. 17) which I now use holds from 3 to 4 drams. A long nozzle is attached, and at the end of this is the hollow needle, 1 inch long, and rather thicker than a hypodermic. The syringe should be filled before the needle is screwed on. The piston is marked with notches on which a travelling disc runs, so that the amount to be injected can be accurately set.

FIG. 17.

The operation can be done at almost any age, as it is soon over and there is no shock. The oldest so far was 72, but it is not advisable when Bright's disease is present. One patient, aged 65, with albumin in the urine, died three weeks after the operation from uræmia. Whether the operation had any thing to do with it I do not know. Advanced arterio sclerosis is also a contra indication.

The *advantages* of the operation are these. There is *no pain* as a rule afterwards, nothing in comparison with perineorraphy or hysteropexy. No loss of blood, no shock. The patient is only under the anæsthetic for five or ten minutes.

Pregnancy is not interfered with as in ventrofixation, because nothing abnormal has been done and the uterus can easily expand.

The risk of the operation appears to be slight. On the other hand, unless done properly, it may easily fail. If the joints of the syringe do not fit properly the solution may all escape into the vagina. Should the cup and stem pessary slip, the uterus may be found fixed in the wrong position.

For the class of case now under consideration, viz.,

prolapse of the first degree, one injection is usually enough. In regard to this the social position of the patient and the life she is going to lead will have to be considered. The woman who has to stand at the wash-tub all day will require more than the woman who need not work for her living. The woman who wants to hunt three days a week, and dance all night, requires more than the opposite stay-at-home type. The reaction of the patient must also be considered. One meets great variations in this respect. The pale, anæmic, waxy-looking woman forms quite a small effusion compared to the ruddy and full-bodied. It is not easy at first to form a correct opinion of the amount of effusion and to know whether it is enough to stand wear and tear, because the effusion in any case nearly always holds up the uterus after one injection, as long as the patient is in bed.

If a *second injection* is necessary there should be an interval of at least fourteen days between the first and second operation, and a smaller quantity of the solution, not more than 40 minims, should be used the second time. The repetition of the injection with a full dose without a proper interval is apt to produce an attack of parametritis. This has occurred in three only of my cases.

After-treatment.—The pessary is removed at the end of three days, and one vaginal douche only is given. The patient is kept in bed, but directed to lie on her face or either side, so as to keep the fundus tilted forwards and prevent retroversion. At the end of a week the effusion is usually complete, although most of it forms in the first forty-eight hours. As a rule there is no rise of temperature. The bowels should be moved on the second day and kept open with a laxative.

As a rule there are no after troubles or complications, and the patients feel quite comfortable. Sometimes bladder irritation is complained of. The quinine after injection must, I think, be precipitated. It is quite rare for any symptoms of cinchonism to occur, although

24 grains are injected altogether at one sitting. On two occasions patients have passed dark-coloured urine almost like porter, and have also complained of deafness.

On making a vaginal examination a week after operation the uterus is found to be held high up in the pelvis and on each side of the uterus some thickening of the cellular tissue and utero-pelvic ligament can be felt. The amount of this, as I have already pointed out, varies according to the condition of the patient.

In order to ascertain whether the effusion will be enough for the purpose, I wait for fourteen days and then get the patient out of bed for five minutes and examine her standing. If on bearing down there is hardly any descent of the uterus a second injection is not required for a prolapse of the first degree.

The next question for consideration is this: Having forced an effusion of lymph or reparative material, how long will it take to organise into fibrous tissue that will stand wear and tear? When dislocation of an ordinary joint takes place the repair of the ligaments has, to a great extent, taken place in two months, but is by no means complete even then. It may be as much as six months before it is as strong as ever it was. Our chief care, then, should be to prevent any strain on the new material thrown out during the first two months after operation.

The next point is what treatment is most likely to lead to organisation of the lymph into fibrous tissue. Again the analogy of the effusion round a joint helps us. Passive movements and massage are used to increase the circulation and cause absorption of the superfluous material. If, on the other hand, the joint is put up in a splint and kept long at rest, more fibrous tissue than is wanted forms and some stiffness of the joints follows.

After the injection it very rarely happens that the amount of effusion is more than required, it is more likely to be less. The indication, therefore, is to restrain the circulation as much as possible through the pelvis, by

TABLE OF ALL CASES OPERATED ON TO THE END OF 1905.

No.	Initials	Age		Duration of prolapse	Date of injection	Temperature	Results
1	M. H.	61	Hospital	7 years ..	June, 1897	Slight rise ..	Very good. Uterus keeps up. Works hard.
2	E. W.	37	,, ...	10 ,, ..	February and July, 1898	Normal	Procidentia recurred.
3	E. W.	39	,, ...	2 ,, ..	February, 1898.. ..	,, ...	Works in a laundry. Quite well.
4	E. P.	44	,, ...	15 ,, ..	February and Aug., 1898	,, ...	Much better. Uterus keeps up.
5	A. J.	29	,, ...	18 months .	March, 1898	,, ...	Has had a full-term child, 1899. Very well.
6	J. B.	46	,, ...	7 years ..	,, ,, ...	,, ...	Fairly good. Much better.
7	A. C.	55	,, ...	16 months .	March and April, 1898	,, ...	Very good. No further trouble.
8	M. R.	51	,, ...	10 years ..	,, ,, ,, ,,	,, ...	Good. Can now do household work.
9	S.	66	Dr. Aikman ..	12 ,, ..	April, 1898	,, ...	Very good. No further trouble.
10	L. A.	65	Hospital	36 ,, ..	April and May, 1898 ..	Slight rise ..	Very good. Quite well.
11	D. Y.	32	,, ...	9 ,, ..	May and June, 1898; May, 1899	Normal	No procidentia; still some prolapse.
12	P. H.	45	,, ...	13 ,, ..	June and July, 1898 ..	High temperature	Quite well.
13	W. B.	29	Dr. Whitcombe ..	2 ,, ..	July, 1898	Normal	Had full-term child, 1899. Uterus keeps up.
14	A. C.	50	Hospital	10 ,, ..	,, ...	100·2°	Good. Is now able to work.
15	A. H.	55	Dr. Whitcombe ..	10 ,, ..	January, 1899	Normal	Good.
16	A. W.	31	Dr. Jago	6 ,, ..	March, 1899	,, ...	Very good.
17	H. M.	40	Hospital	6 ,, ..	March and April, 1899	,, ...	Fairly good. Cystocele gives trouble.
18	C. J.	36	Dr. Lauchlan ..	4 ,, ..	April, 1899	,, ...	Very good.
19	E. W.	35	Dr. Chilcott ..	1 year ..	November, 1899 ..	,, ...	Good. Not been seen lately.
20	C.	64	Mr. Bland-Sutton .	Procidentia 5 months	,, ,,	,, ...	Good.
21	S. L.	47	Dr. Brown.. ..	20 years ..	,, ,,	,, ...	Fairly good.
22	S. G.	65	Hospital	7 ,, ..	January and Feb., 1900	,, ...	Very good.
23	S. M.	62	,, ...	4 ,, ..	February and Mar., 1900	,, ...	Quite well. Works at wash-tub.
24	H. C.	41	Dr. Fenton ..	6 ,, ..	February and Apl., 1900	,, ...	Very good.
25	S. G.	67	,, ...	25 ,, ..	March and April, 1900	,, ...	,, ,,
26	N. C.	35	Dr. Orr	9 ,, ..	April 2 and 26, 1900 (two)	,, ...	Very good. Works the whole day standing.
27	L. M.	21	Hospital	3 ,, ..	April, 1900 (one) ..	,, ...	Fairly good. Some prolapse still. Full term child, 1905, under Dr. Maclean.

28	E. W.	32	Hospital	7 years ..	May, 1900 (one) ..	Normal	Very good.
29	A. L.	25	,, ...	3 ,, ..	April, 1900 (one) ..	,, ...	Good. Ovariotomy. Polypus removed.
30	H. P.	48	Dr. Fenton ..	4 ,, ..	June, 1900 (one) ..	,, ...	Fairly good.
31	M. P.	47	Dr. Cowen.. ..	24 ,, ..	July, 1900 (two) ..	,, ...	Very good. Has recovered use of her eyes.
32	R. W.	45	Dr. Fowler ..	8 ,, ..	October, 1900 (two) ..	Slight rise for 24 hours	Uterus keeps up. Requires pessary for retroversion.
33	A. P.	57	Hospital	2 ,, ..	,, ,, (one) ..	Normal	Lost sight of patient.
34	E. B.	43	Dr. R. Duncan ..	10 ,, ..	,, ,, (two) ..	,, ...	Much better. Can do housework.
35	C. C.	40	Dr. Fenton ..	2 ,, ..	November, 1900 (two)..	,, ...	Uterus held up. Not seen lately.
36	L. M.	43	Dr. Buckle ..	15 ,, ..	October and Dec., 1900	,, ...	Uterus keeps up. Wears pessary for cystocele.
37	H.	62	Private	2 ,, ..	November, 1900 (one)..	,, ...	Very good.
38	C. B.	55	Mr. Bland-Sutton.	18 ,, ..	January, 1901 (two) ..	,, ...	Good.
39	C. T.	55	Hospital	8 months.	January and Feb., 1901	,, ...	Uterus keeps up.
40	F. B.	42	Dr. Cowen.. ..	19 years ..	,, ,, ,,	,, ...	Good.
41	C. L.	58	Dr. Bell, Rochester	15 ,, ..	February 28, 1901 ..	,, ...	Failed.
42	M. B.	64	Hospital	26 ,, ..	June 6 and July 4, 1901	,, ...	Very good.
43	A. J.	28	,, ...	3 ,, ..	July, 1901	,, ...	Good.
44	L. L.	23	Private	4 ,, ..	October 14, 1901 ..	,, ...	,,
45	M. W.	49	Dr. Michie ..	25 ,, ..	October 18, and colpo-perineorrhaphy	,, ...	,,
46	E. R.	74	Hospital	45 ,, ..	October 18, 1901 ..	,, ...	Very good.
47	S.	42	Dr. C. Keith ..	12 ,, ..	November, 1901 ..	,, ...	,, ,,
48	M. G.	51	Hospital	2 ,, ..	December 5, 1901 ..	,, ...	Good.
49	C. J.	37	,, ...	1½ ,, ..	January, 1902	,, ...	Very good.
50	M. W.	58	,, ...	33 ,, ..	,, ,, ...	100·2°	,, ,,
51	E. M.	34	Dr. G. Cowen ..	1 year ..	March 13, 1902.. ..	Normal	,, ,,
52	W.	31	Dr. Brook, Lincoln	2 years ..	April and Nov., 1902 ..	,, ...	,, ,, Delivered of a child, April, 1905.
53	A. M.	35	Hospital	2 ,, ..	March 17, 1902 ..	,, ...	,, ,,
54	H. B.	34	Dr. Sedgwick ..	3 ,, ..	April 10 and 24, 1902..	,, ...	,, ,, Delivered of a child, April, 1903.
55	S. F.	34	Dr. H. Menzies ..	4 ,, ..	April 21 and May, 1902, and colpoperineorrhaphy	,, ...	,, ,,
56	P.	33	Dr. Thoresby Jones	6 ,, ..	May, 1902	,, ...	Good.

TABLE OF CASES.—*Continued.*

No.	Initials	Age		Duration of prolapse	Date of injection	Temperature	Results
57	E. B.	48	Hospital	20 years ..	May 26 and 15, and June, 1902	101°	Very good.
58	E. C.	35	,, ...	16 ,, ..	June 5, 1902	Normal	Good.
59	E. R.	58	,, ...	12 ,, ..	June, 1902	,, ...	,,
60	R. S.	28	Dr. Banham ..	5 ,, ..	July 3rd, 1902	,, ...	Very good. Delivered of a child, 1903.
61	K. L.	33	Dr. Bathurst ..	10 ,, ..	,, ,, ...	,, ...	,, ,,
62	C. T.	58	Hospital	3 ,, ..	November 11th ..	,, ...	Good.
63	B.	35	Dr. Thoresby Jones	7 ,, ..	November	,, ...	Very good.
64	R. J.	47	Dr. Cowen.. ..	20 ,, ..	January 8 and 19, 1903	,, ...	,, ,,
65	J. W.	57	Dr. Penfold ..	27 ,, ..	Jan. 22 and Feb. 5, 1903	,, ...	Fairly good.
66	R. S.	30	Hospital	4 ,, ..	February 12, and colpo-perineorrhaphy	,, ...	Very good.
67	A. D.	31	Dr. Thoresby Jones	6 weeks ..	March 5th	Temperature rose 14 days after operation	,, ,,
68	L. T.	24	Hospital	3 months.	March 23rd	Normal	,, ,,
69	L.	45	Dr. W. H. Bourke	5 years ..	April	,, ...	,, ,,
70	H. P.	50	Hospital	10 ,, ..	May 18, 1903	,, ...	Good.
71	P.	33	Dr. Keightley ..	3 ,, ..	March, 1903	,, ...	,,
72	M. D.	42	Hospital	2½ ,, ..	March 18, 1903 ..	,, ...	Improved.
—	M. D.	—	,, ...	2½ ,, ..	July 10, and colpoperi-neorrhaphy	,, ...	Good.
73	L. H.	30	Dr. Adams ..	3 ,, ..	July 3, 1903	,, ...	,,
74	S. G.	70	Hospital	2 months.	,, ,, ...	,, ...	,,
75	E. S.	47	,, ...	9 years ..	July 16	,, ...	Very good.
76	J. C.	44	Dr. Bovill	4½ ,, ..	,, ...	,, ...	,,
77	A. R.	63	Dr. Cayley ..	25 ,, ..	October 29	High temperature for 3 days	Good.
78	E. P.	34	Dr. Huxley ..	1 year ..	August, 1903	Normal	Improved

79	A.	60	Dr. S. Kent ..	15 years ..	Dec., 1903; May, 1904; and March, 1905; and colpoperineorrhaphy	Normal	Recurred.
80	R. H.	46	Hospital	2 ,, ..	January 19, 1904	,, ...	Very good.
81	M. P.	36	,, ...	Procidentia 2 months	,, ,, and colpoperineorrhaphy	,, ...	,, ,,
82	H. S.	44	,, ...	10 years ..	January 19, 1904, and colpoperineorrhaphy	,, ...	,, ,,
83	M. R.	63	,, ...	Many years	February 2nd	100·8°	,, ,,
84	R. S.	38	,, ...	4 years ..	March 8..	100°	Good.
85	A. N.	45	Dr. Phillipps ..	5 months.	April 11, and perineorrhaphy	Normal	,,
86	H. W.	28	Hospital	2 years ..	April 26	,, ...	Very good.
87	J. Z.	42	Dr. Lytle	17 ,, ..	April 12 and 26, and colpoperineorrhaphy	,, ...	Good.
88	E. D.	68	Hospital	30 ,, ..	May 24	,, ...	,,
89	A. S.	62	,, ...	4 ,, ..	June 2	103° for 2 days..	Very good.
90	M. D.	43	,, ...	8 ,, ..	October 11	100°	Fairly good.
91	I. M.	34	,, ...	7 ,, ..	November 4	101°	Good.
92	L. B.	46	Dr. Bathurst ..	12 ,, ..	October 18, and colpoperineorrhaphy	103°	Very good.
93	R. G.	42	Hospital	12 ,, ..	October 25, November 8	Temperature high	Good.
94	C. L.	43	Dr. R. Bell ..	3 ,, ..	February 7 and 20, 1905	Normal	,,
95	J. A.	52	Dr. Kent	12 ,, ..	March, 1905	,, ...	Prolapse recurred.
96	E. S.	27	Hospital	3 ,, ..	,, ,, ...	,, ...	Good.
97	A. D.	60	,, ...	2 ,, ..	May, 1905	101°	Fairly good.
98	M. H.	63	,, ...	16 ,, ..	,, ,, ...	102°	Died from uræmia 3 weeks after operation.
99	E. R.	65	,, ...	18 months.	,, ,, ...	Normal	Very good.
100	E. T.	29	,, ...	4 years ..	,, ,, ...	,, ...	Good.
101	L. E.	36	Dr. Bourke ..	7 ,, ..	June, 1905	,, ...	Very good.
102	H. F.	59	Hospital	1 year ..	October, 1905	,, ...	,, ,,
103	E. P.	37	,, ...	7 years ..	,, ,, ...	,, ...	Good.
104	F. P.	23	Dr. Leonard Dobson	9 months.	November, 1905 ..	,, ...	,,
105	A. P.	43	Dr. Powell ..	6 years ..	December, 1905 ..	,, ...	,,

keeping the patient lying down, until the repair has taken place.

For prolapse of the first degree the patient is kept in bed for ten or fourteen days, according to the severity of the case. If a second injection is not required an india-rubber ring is now inserted to take some of the strain off the ligaments, and the patient is allowed to get up, but not to walk about. She must keep her feet up on a sofa for another fortnight. During the second month she may be allowed to go out daily for a drive or in a bath-chair, but not to walk more than up and down stairs. During the third month she may walk about more, but not any long distances, nor lift heavy weights, nor bicycle or ride on horseback. After that she may be allowed to do as she likes.

As the first patient was treated in 1897, I have now had nine years' experience and operated on more than 100 cases.

Results.—The results have been much better than I expected. All the patients were much improved. In 75 per cent. the uterus kept up permanently. In 20 per cent. the uterus was kept within the vagina instead of being outside, but was lower than normal. In 5 per cent. the prolapse recurred.

In considering these results we must remember that a large proportion of these cases had procidentia for ten, fifteen, and even twenty years before the treatment was applied. Many of them had been the round of the hospitals without any benefit. If these cases had come earlier for treatment, as soon as the cervix began to show at the vaginal os, the proportion of successes would be probably as much as 95 per cent. Taking those cases alone that we meet with in private practice, where the patient is condemned to always wear a pessary, or have an operation, the proportion of successes is very high. One reason no doubt is that they are better fed and in better general condition than hospital patients, and therefore react better to the injection. The amount

of strengthening in the shape of new fibrous tissue required to keep up the uterus is much less than is required for a case of chronic procidentia.

The Operation of Perineorrhaphy for Torn Perineum.

Incomplete Laceration, not Extending into the Rectum.—There are several ways of doing this operation. I have tried most of them at different times and have not the slightest hesitation in saying that the flap-splitting method is by far the best. There is no loss of tissue from paring the surface; the time required is quite half that of the other. Primary union nearly always occurs with a good perineum.

It is much easier to understand the operation by watching some one do it, than by reading about it.

The patient is prepared in the usual way by clearing out the bowel thoroughly with an aperient the night before, and giving an enema or two on the morning of operation.

The vagina having been thoroughly douched with 1 in 2,000 solution of hydrarg. perchloride, the patient is placed in the lithotomy position. If a Clover's crutch is used less assistance is required. The buttocks are brought well up to the edge of the table. The first and second fingers of the left hand are dipped in vaseline and introduced into the rectum; the tips of the fingers are used to push forward the junction of the vaginal wall with the torn perineum, the right hand, holding the special angular scissors, the lower blade of which has a straight sharp stiletto point, makes a transverse incision in the recto-vaginal septum along the edge of the vaginal wall. The length of this incision will vary according to the character of the split; it is usually 1 to 1½ inches long. The assistant, with a hook, lifts the edge of the vaginal flap, while the operator proceeds with the dissection, so as to separate the posterior vaginal wall for a distance upwards of 1 to 1½ inches

from the rectum. If any vessels spurt they must be tied with thin catgut; general oozing can be disregarded. The assistant, either by irrigation with boracic solution or with sterilised swabs, keeps the field clear of blood.

The next step is to make two lateral incisions with the scissors along the line of union of the vaginal mucous membrane and the epithelial border of the vulva. These incisions, by splitting the soft tissues on each side, form a double flap. This step in the operation is very often done too timidly by beginners, with the result that the flaps are not large enough (see fig. 18). Any vessel that spurts must be caught and tied with catgut or thin silk, but general oozing may be disregarded. Silkworm gut is used for the main sutures. Although the vaginal wall presents a straight line in most cases to the eye, it has nearly always been split more or less with the perineum, and in order to make the operation a complete success the edges must be pared and then united with catgut sutures (see fig. 19).

A curved needle on a handle is passed from one side to the other, the suture is then passed through the eye and drawn through while the finger of the left hand is in the rectum to prevent perforation. The point of the needle passes down one side of the flap and then along the other side, so as to make one big surface to meet the opposite side. The lowest is passed first. Three or four main sutures are required, and each one is held by Aveling's shot and coil, because it facilitates removal of the sutures. Finally the whole wound is douched with boracic lotion and then the sutures are rapidly drawn tight. Sometimes a single suture of catgut is required to hold the flap of the vagina snugly in position.

After-treatment.—The wound is dressed every day and kept clean; some powdered boracic or iodoform is sprinkled over it. If menstruation supervenes, the vagina is douched daily. This must be done with great care and the vulva exposed so as not to disturb the wound.

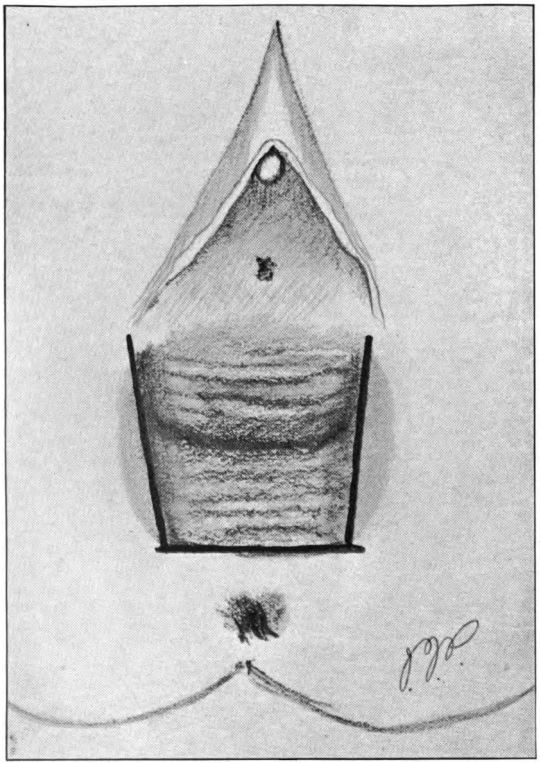


FIG. 18.—Incomplete laceration of the perineum. Lines of incision for the flap-splitting operation.

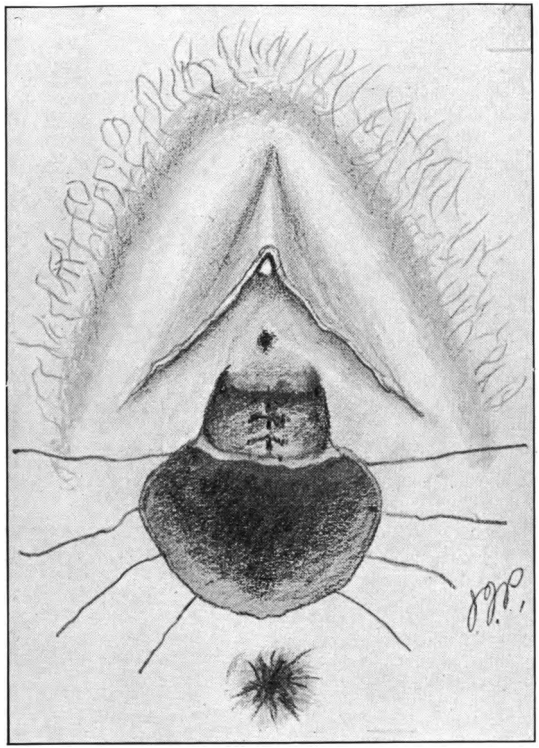


FIG. 19.—Showing catgut sutures uniting vagina and tied. Silkworm gut sutures in perineum in position.

The catheter should be used for the first three days, and after that, if the patient is able to micturate, she should turn over on her face so as to prevent the urine running over the wound.

The bowels are opened on the second day and kept open with laxatives. The nurse must carefully clean the anus after each action and see that none of the fæces go on to the wound.

On the eighth to the tenth day the silkworm sutures are removed by cutting off the shot and drawing the coil of wire off. The ends of the sutures are then seen to be projecting and can easily be removed. As a rule the wound is then healed and the patient may be transferred to a sofa, but she will require to rest more or less for at least two months, to allow of consolidation in the new tissue to prevent it from stretching.

Operation for Complete Rupture of the Perineum.

The patient is prepared as already described and placed in the lithotomy position. Two fingers of the left hand are passed into the rectum while the angular sharp-pointed scissors are held in the right; a transverse incision is now made horizontally between the edge of the vaginal mucous membrane and the rectum. This incision goes through the cellular tissue of the recto-vaginal septum (see fig. 20). The dissection is continued until the posterior vaginal wall is separated enough to enable the perineum to come together underneath it. The split in the vaginal wall is now brought together with catgut sutures, so that it resumes its normal shape (see fig. 21).

In order to free the rectum, an incision is made with the scissors downwards on each side from the ends of the transverse incision and along the edge of the exposed mucous membrane of the rectum until it reaches to within ½ or ⅓ inch of the anus (see fig. 20). The result of these two incisions is to release the rectal walls

and allow them to come together. Two pairs of forceps are now attached, one on each side, to the end of the inner flap near the anus.

These are both twisted inwards so as to rotate the rectal walls towards each other. Catgut sutures are now used to unite the tear in the bowel; the number required will depend on the length of the tear. They are made to emerge ¼ inch from the edge of the mucous membrane, and are tied in the wound so that none of the sutures are in the rectum but are buried and are subsequently absorbed.

In doing this part of the operation it is necessary to make the downward incisions sufficiently deep to thoroughly free the bowel and enable its walls to come together without any tension on the catgut sutures (see fig. 22).

In many cases the freeing of the vaginal and rectal walls has exposed a sufficient raw surface to restore the body of the perineum, but if it is not enough two upward incisions are now made along the junction of the vaginal mucous membrane and the epithelial border of the vulva from each extremity of the first incision (see fig. 20). Any vessels that spurt must be tied, but general oozing may be disregarded. Silkworm gut sutures are now passed from one side to the other, but missing out the base of the wound, for ½ inch (see fig. 22). Finally the wound is thoroughly douched with boracic lotion and then the sutures are drawn together and fixed with Aveling's shot and coil.

The bowels must be kept open with laxatives. The wound must be carefully dressed every day and kept clean. The catheter should be used for the first three days. On the tenth day the silkworm gut sutures are removed. As a rule primary union occurs, and the patient recovers with complete control of the sphincter ani.

Advantages of the Flap-splitting Operation.—In the first place, no tissue is removed as in the old operation

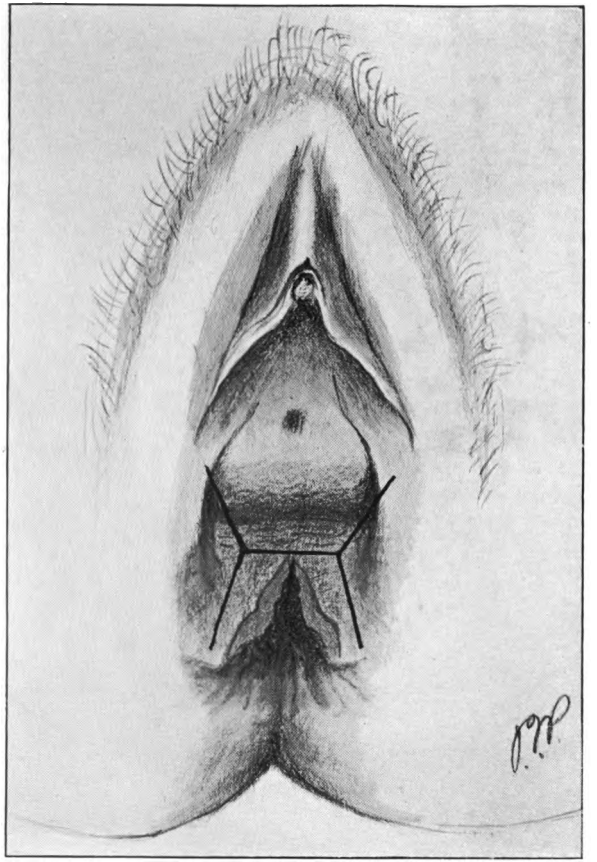


FIG. 20.—Complete laceration of the perineum. Lines of incision for the flap-splitting operation.

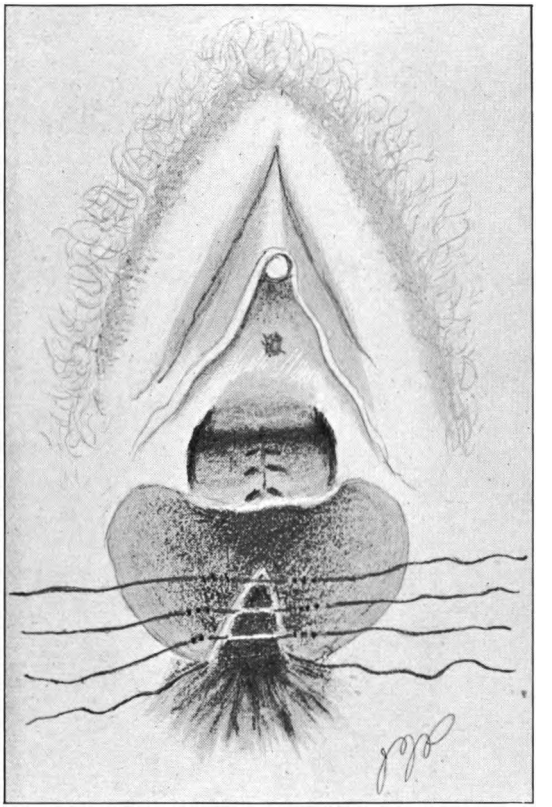


FIG. 21.—Showing vaginal wall dissected up and united by catgut. The catgut sutures to unite rectum in place.

of paring away the mucous membrane. Secondly, it takes about a quarter the time of the old operation.

If the operation fails or if after childbirth it has to be repeated, the patient is in no worse position than before, because no tissue has been removed. With proper technique, good nursing, and the patient in fair health the operation ought never to fail.

Prolapse of the Second or Third Degree, with Ruptured Perineum or Relaxed Vaginal Outlet.

Within this group are included all the worst cases that we have to deal with. The uterus, from hanging outside, often becomes ulcerated from friction, and in neglected cases may present an appearance resembling an epithelioma. On more than two occasions cases have been sent to me with this diagnosis. Rest in bed and the application of carbolic acid will soon heal up the ulceration.

The vaginal walls are often found enormously dilated, and on straining roll out of the vulva. When, as often happens, this condition is found in a woman over the menopause, and who has a thin, flabby abdominal wall as a result of child-bearing, the operation of ventrofixation is perfectly useless. Many distinguished gynæcologists find it necessary to do hysterectomy ; even then the patient is not much improved, because the vagina can still come down. Personally I have never found it necessary to resort to this.

By injecting the broad ligaments two or three times, and in a few cases following this up by a colpoperineorrhaphy I have succeeded in keeping the uterus within the vulva, even in the worst cases. One was a woman over 60, who had complete procidentia for thirty-five years. These patients should always be kept in bed for a week before operation. The uterus must be replaced. Any ulceration must be healed up and the vagina thoroughly douched with an antiseptic. A week's rest enables the

various organs displaced by the procident uterus to settle down into position. The bladder is nearly always displaced. A sound should be passed so as to ascertain its position and dimensions.

At the first operation (operation described, p. 31) a dram of quinine solution is injected into each broad ligament. The operator must then be guided by the amount of effusion and also by the duration of the prolapse whether a second injection is advisable. Sometimes even with bad cases one is enough, but as a rule when there is a history of complete procidentia for more than ten years it is advisable to inject both ligaments twice. An interval of at least fourteen days must elapse between the two operations, or a rise of temperature with parametritis may occur. If the effusion from the first injection is small a second should always be given. In one case and one only there was no effusion at all from two injections, but a third produced the desired result, and cured the patient. In only one other patient have three injections been necessary. She had procidentia for thirty-five years, and being over 60 years of age one could hardly expect one or two injections to be enough.

The cystocele and rectocele in many of the patients disappear as soon as the uterus is kept up. Even if there is some slight protrusion after the operation it will often disappear in the course of a few months. The vaginal walls, when the uterus is kept up, appear to recover their tone. When, however, there is very marked relaxation of the vaginal outlet, and when it is found after the operation that there is still a very distinct cystocele and rectocele, it is advisable to do a colpo-perineorrhaphy. By this means the vaginal outlet can be reduced to its virgin size again. The operation also helps to keep up the uterus, by taking some of the strain off the uterine ligaments. Anterior colpotomy I have given up entirely as I do not find it does any good.

In order to correct the distension of the vaginal outlet we should attempt to restore the parts to the condition

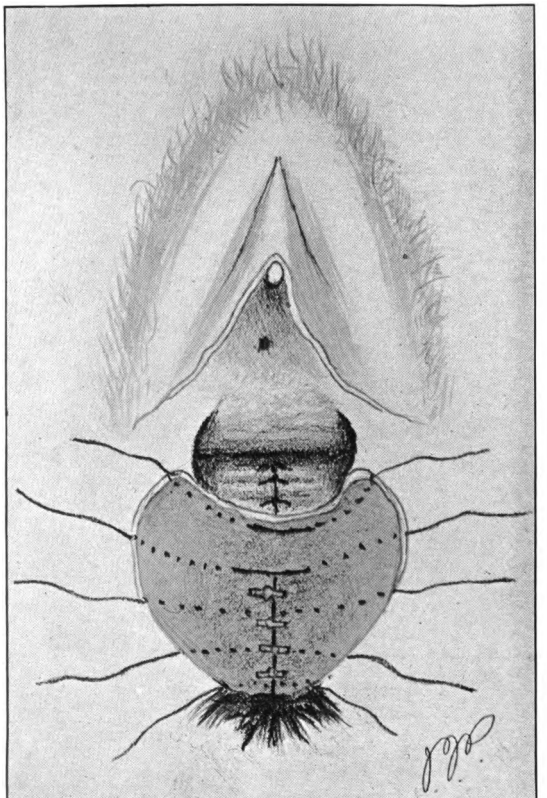


FIG. 22.— Complete laceration of the perineum. Catgut sutures tied, uniting the tear in the rectum and vaginal walls. Main sutures of silkworm gut in position.

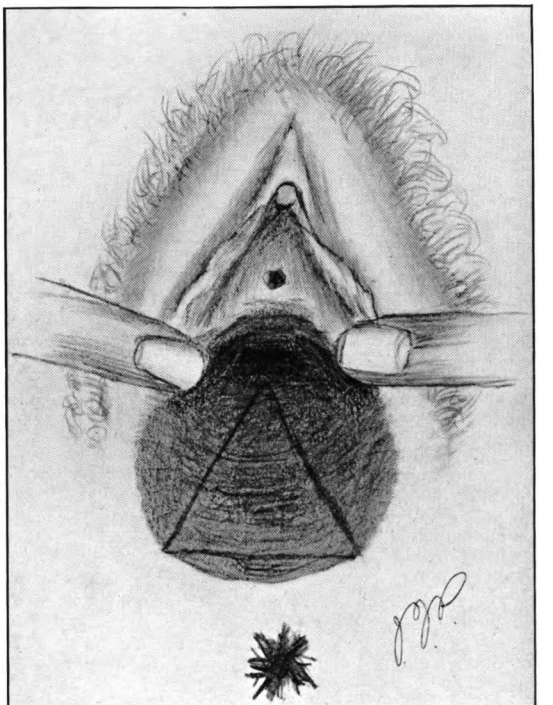


FIG. 23.—Colpo-perineorrhaphy, showing the triangular flap removed from the posterior vaginal wall.

they are found in a normal virgin capable of doing considerable physical exercise. In these young women the small vaginal opening is close up to and under the pubes, and is kept there by a firm perineum, the levator ani, while the posterior vaginal wall coming close up to the anterior supports it and prevents cystocele. By removing a large triangular flap from the posterior wall we are able to reduce the vagina to any size we like.

The Operation of Colpoperineorrhaphy.

The patient is prepared for operation by giving an aperient over night and an enema in the morning, so as to clear the bowel well out. The vagina is thoroughly douched the previous day and the morning of the operation with hydrarg. perchlor. 1 in 2,000.

After she has gone under the anæsthetic she is placed in the lithotomy position and held by Clover's crutch.

The first step is to remove the triangular flap from the posterior vaginal wall. The size of this will depend on the amount of relaxation.

The first and second fingers of the left hand are introduced into the rectum and push forward the vaginal wall. The right hand with a pair of forceps catches it up at a point from 1½ to 2½ inches from the outlet and in the middle line (see fig. 23). The assistant takes the forceps and pulls them forwards towards the operator, so as to expose the lower half or two-thirds of the posterior vaginal wall.

A transverse incision with angular scissors is now made from 1½ to 2½ inches at the lower margin of the outlet along the junction of the vaginal wall and epithelial surface of the perineum. From the extremities of this line an incision is carried up through the vaginal wall only on each side to the apex of the triangle held by the forceps (see fig. 23).

This flap is now dissected off from the rectum, the point of the scissors running through the connective

tissue of the recto-vaginal septum, while the assistant with a tenaculum lifts the flap as the operator directs.

Any vessel that spurts is tied, and then the margins of the vaginal wall are brought together by catgut sutures tied in the vagina. These are left in and are gradually absorbed or come out of themselves.

An incision is now made upwards on each side along the border of the vagina and the vulva from the ends of the transverse incision, so as to free the vaginal walls still more and make a flap on each side to form a perineum.

A few more catgut sutures are used to unite the vaginal flap, now that it is more freed, so as to make it still smaller.

The main sutures of silkworm gut are next passed across from one side to the other with a curved needle on a handle missing the base out for ¾ inch. The two ends of each suture are passed through Aveling's shot and coil. The whole wound is next thoroughly douched with boracic lotion. The sutures are then drawn tight and the shot clamped with strong forceps or pliers.

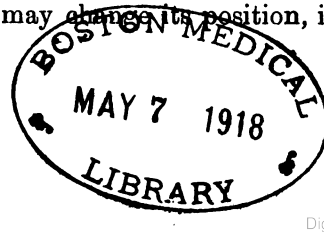
The *after-treatment* is the same as for the operation on simple rupture of the perineum (see p. 44).

The results from this operation are most satisfactory when combined with injection of the broad ligaments. The vagina, being reduced to its normal size, is a great comfort to the patient. The restoration of the pelvic floor takes some of the downward strain, and so relieves the uterine ligaments.

A great variety of other operations have been devised to meet the difficulties encountered with a severe case of procidentia uteri. None of them are as good as the procedures I have described in detail, so far as my own experience goes.

Injections of paraffin have been tried into the cellular tissue, so as to form a pad on each side to hold up the uterus. The objections to this method are as follows:—

The paraffin may change its position, in which case it



becomes useless. In most of the patients it has failed to keep up the uterus. Its use is not without danger, fatal embolism having occurred in more than one instance. Its action is purely mechanical, whereas after an injection of quinine natural repair takes place by the formation of new fibrous tissue.

Hysterectomy may sometimes be necessary, but it hardly seems logical to remove the uterus and leave a still weaker spot between the vaginal walls.

When Dr. Galabin's modification is carried out a better result will follow. The operation is done in the same way as for carcinoma uteri, but is usually easier on account of the dilatation of the vagina and the extra mobility of the uterus. After the uterus has been removed Dr. Galabin recommends stitching, together with chromic catgut the upper halves of the broad ligaments at a level above the ligatures. In this way a strong transverse band is formed across the pelvis constituted by the shortened broad ligaments, and which becomes adherent to the top of the vagina and holds it up.

Cystocele.

This deserves separate discussion, because it is often the condition which the patient most complains about, and sometimes is most difficult to cure.

The cases may be grouped as follows :—

(*a*) Secondary to prolapse of the uterus.

(*b*) Secondary to ruptured perineum, or enlarged vaginal outlet.

(*c*) Primary, without prolapse or rupture or dilatation of the vagina.

(*d*) Primary associated with prolapse, which has followed and been caused by the cystocele.

Group *a* is dealt with by operating on the uterus and getting rid of the prolapse. Group *b* is treated by repair of the perineum, or by doing colpoperineorrhaphy (see p. 49).

Group *c* gives more trouble. It may occur but rarely in nulliparous women. An indiarubber ring pessary is useful and sometimes answers. The best pessary of all is Dr. Galabin's for anteversion, but it is more difficult to introduce and withdraw. Astringent vaginal douches should also be used. Very often the general health is run down, but not always. Iron and other tonics and bracing air are of value. In all probability the application of a mild faradic current would do good in restoring the muscular tone of the anterior vaginal wall.

Anterior colporrhaphy is not of much, if any, value, so far as my experience goes. Posterior colporrhaphy, with resection of the perineum, by narrowing the vagina and bringing the posterior wall closer up under the pubes, does more good, but this might cause some difficulty in parturition.

My friend Dr. J. Aikman, of Guernsey, has devised an operation for cystocele which has a future before it. The abdomen is incised in the middle line as in the suprapubic operation for stone. The bladder, previously distended with boric acid solution, is kept full by the pressure of an assistant's finger on the urethra *per vaginam*. When the muscular tissue of the bladder is exposed the surroundings are grasped with forceps and the finger swept round between them and the muscular coat until the bladder, especially near the neck, is freed from its bed. The bladder is now emptied. The forceps, including the surrounding tissues of the bladder, are then drawn towards the wound and included in a ligature, the parts bruised by forceps being cut away. The free ends of the ligature are then passed each through the corresponding rectus muscle and used as a stitch to bind them together, and the wound closed. The recovery after operation is perfect. By this means the strain on the anterior vaginal wall is relieved.

Group *D* is best treated with a Galabin pessary. This not only keeps up the cystocele, but is also a most efficient pessary for the prolapse. The operative treatment would be the same as for group *C*.

Slight Prolapse and Retroflexion.

There is nearly always some amount of prolapse associated with retroflexion. As a rule the former is the result of the latter. When the prolapse is only slight it will be found to disappear in some cases when the uterus is replaced in a position of anteversion. In such cases the chief pathological condition is the retroflexion. If the uterus cannot be kept up by pessaries and other treatment (see p. 24), the best operation is a ventrosuspension (see p. 79). By this means the retroflexion is cured and also the minor degrees of prolapse. The results, in fact, are very satisfactory, and patients who before had given up exercise are able to cycle and ride and play lawn tennis with impunity. When, however, the prolapse extends to the second or third degree the drag on the abdominal wall is much greater, and ventrosuspension is not enough to hold up the uterus. If ventrofixation is done the adhesion of the uterus is so strong that expansion cannot take place if pregnancy supervenes, and abortion or other trouble is sure to follow (see chap. V.).

Prolapse and Hypertrophy of the Cervix.

Whenever prolapse of the uterus is well marked there is always hypertrophy of the cervix. In most cases this takes the form of a general hyperplasia and congestion, with marked erosion. Usually the enlargement is general in all directions, so that the cervix looks like a round mushroom before it is opened. In addition to this there may also be *elongation of cervix either infravaginal or supravaginal.*

The former, INFRAVAGINAL ELONGATION, is a somewhat rare affection, and is generally found before marriage. It is probably a congenital condition. The cervix is often conical in shape, with a small external os. The cause of the condition is unknown.

The *symptoms* are those we should expect. Irritation of the vagina, discomfort on walking, a certain amount of bearing-down pain, leucorrhœa, and sterility. The patient may also complain of something projecting in the vagina.

The *diagnosis* is not difficult. The external os can be seen on the end of the projection. The sound passes more than the normal distance, while the fundus is found in its usual position, as a rule. The vaginal fornices are not obliterated, so the length of the cervix can be distinctly felt. Although there is usually no distinct prolapse the extra weight of the uterus drags on the uterine ligaments, and in time causes descent, unless patients came for treatment in time.

The *treatment* consists in amputation of the cervix. In former days the cautery was sometimes used, but in these days of aseptic surgery it is quite given up by the best operators.

Operation.—Amputation of the cervix for elongation or hyperplasia.

The patient is prepared in the usual way and placed in the lithotomy position, while Clover's crutch is used to secure the legs. The cervix is then drawn down by a volsella. A sound is passed into the bladder in order to ascertain its limits. The point at which the incision is to be made is now determined, so as to leave the cervix about normal in length. With a scalpel in the right hand the operator makes a circular incision through the vaginal mucous membrane *only* of the cervix and separates it upwards, while he draws with the left hand on the volsella. By this means it is possible to cut through the body of the cervix at a higher level than the mucous membrane, leaving a flap of the latter to draw over the raw stump. If any vessels give trouble the best way to stop them is to run a catgut suture on a fine curved needle under the bleeding point and then tie. General oozing may be disregarded. In fact, any bleeding that occurs is usually stopped by the

insertion of sutures as follows: A curved needle in a holder, armed with silkworm gut, is passed through the edge of the flap of mucous membrane and then through the inner edge of the cervix into the endometrium. Similar sutures are passed all round and secured with Aveling's shot and coil.

When the cervix is very large it may be advisable to suture the flaps of vaginal mucous membrane together at the most prominent portions and apply only the central sutures through the endometrium, as above described.

Another method is to split the cervix on each side. Each lip is then cut off by transverse incisions so as to make a gutter. The raw surfaces are united by passing sutures from within the cervical canal through the cervix and the external mucous membrane.

When it is advisable to do a bloodless operation, a strong hare-lip pin is passed transversely through the cervix a little above the line of incision. A piece of fine india-rubber tubing is tied round the cervix above the pin, or a piece of stout silk may be used, or an india-rubber umbrella ring. Any one of these will effectually control the hæmorrhage. After the sutures are drawn tight the tourniquet is removed. If there is still any oozing of importance a few additional sutures will control it.

Elongation of the Supravaginal Cervix.

This condition is due to prolapse of the vaginal walls, dragging on the cervix, while the body of the uterus is held by the uterine ligaments. Such cases are not at all common. Out of 100 cases of prolapse of the uterus I have only found two where this condition was at all well marked; even in them the fundus was below the normal level in the pelvis, showing a certain amount of prolapse.

Although in nearly all cases of prolapse the cavity of the uterus is longer than normal, it is rarely due to this

cause, the enlargement being general from chronic congestion and hyperplasia or subinvolution.

Prolapse and Pregnancy.

It is rare for patients suffering from prolapse of the uterus to become pregnant. Out of 100 cases I have only known one instance occur. In fact, one may say that prolapse is one of the causes of sterility. When the uterus is restored to its place and kept up by suitable means the congestion goes down, and after a time conception may occur. After injection of the broad ligaments I know no less than seven patients who became pregnant and were delivered of living children without any difficulty.

It sometimes happens that a patient who has never suffered from prolapse becomes pregnant and the increased weight of the uterus causes prolapse, but such cases are not common; as a rule the ligaments increase in size with the growth of the uterus.

Whenever a patient suffering from displacement becomes pregnant we may expect her to be worse after the child is born. It is most important to combat this as much as possible by appropriate treatment. The patient should be kept in bed for an extra week and instructed *not* to lie on her back but on her face, as much as possible, so as to throw the uterus forward. Before she gets up she should be fitted with a pessary to take the strain off the uterine ligaments. Hard work of any kind should be tabooed until she has recovered her strength.

The difficulties likely to arise during pregnancy after a *ventrofixation* are well known. After *ventro*-suspension, as advocated at page 79, the patients, in my experience, have no difficulty. The question is discussed more in detail on page 29.

Prolapse and Cancer.

One might expect cancer to be somewhat prevalent in procidentia uteri, considering how often one finds the cervix ulcerated from friction. Happily the reverse of this is the case, and up to the present I have never seen carcinoma of the cervix associated with any marked case of prolapse.

I have come across one case of carcinoma of the body of the uterus occurring in a procident uterus, but only one, in twenty years' experience, at a special hospital for women.

CHAPTER V.

Retroversion and Retroflexion.

Etiology.—This displacement occurs when there is relaxation of the round and utero-sacral ligaments. The former allow the fundus to fall back beyond the normal limit, while the latter allow the cervix to come forward. The uterus is thus rotated backwards, being held about the centre by the utero-pelvic band in the broad ligament. When the round ligaments are stretched to their limit the fundus can be found in Douglas' pouch behind the posterior vaginal wall. If at the same time the utero-sacral ligaments are only partly stretched and still hold the cervix to some extent, a retroflexion of the uterus results. When retroversion occurs without prolapse—a not unfrequent condition—it is because the utero-pelvic band in the broad ligament holds up the uterus, assisted by the pelvic floor.

The causes which lead to stretching of the ligaments are various. In single women the most common is bad health, either inherited or acquired, by which the muscular bands within the uterine ligaments lose their tone, give way, and possibly atrophy in some cases.

Any considerable increase in abdominal pressure from violent efforts, such as lifting heavy weights, vomiting and straining, &c., may cause retroversion, particularly if at the same time the bladder is distended, because the abdominal pressure is then exercised on the anterior wall of the uterus and thus tends to force it more down into Douglas' pouch.

I have come across several cases where a fall appeared to cause retroversion.

Any increase in the weight of the uterus, such as subinvolution, from pregnancy or abortion, enlargement from tumours, chronic metritis, or even pregnancy, may be the determining cause in patients whose ligaments are not naturally strong.

A ruptured perineum, or even marked dilatation of the vaginal orifice, by allowing the posterior vaginal wall to sag down, is in many cases the chief cause after parturition. This condition is often assisted by increased weight from subinvolution and also from a failure of the ligaments to recover their tone.

Since the fundus is heavier than the cervix, gravity begins to act on it directly it falls back beyond the perpendicular, so that a constant strain is kept up on the round ligaments. This, with other causes, makes retroversion the most common of all uterine displacements.

Other remote and less frequent causes are, arrested development, by which the anterior vaginal wall remains shorter than normal, and thus draws the cervix forward and rotates the fundus backwards; tumours in front of the uterus; fixation of the cervix to anterior pelvic wall from previous attacks of cellulitis.

The development of tumours in the anterior wall of the uterus usually causes retroflexion to some extent.

Habitual constipation, causing considerable and continued distension of the rectum, puts the sacro-uterine ligaments on the stretch and probably in time impairs their strength. Habitual distension of the bladder is quite as mischievous, although it acts in quite a different way.

Congenital retroflexion also occurs in rare instances. The uterus is found permanently set in acute flexion and no treatment will ever straighten it.

Symptoms.—These are not always alike in all patients. With a small uterus and a roomy pelvis retroversion may

occur to an angle of 90° without much in the way of symptoms occurring. On the other hand, if the uterus is enlarged by subinvolution, or if the patient is of a neurotic temperament, the symptoms may be very marked, especially if the retroversion is complete.

In *acute* cases there is pain on walking and in the back, bearing down and a desire to defæcate, and very often irritation of the bladder.

The symptoms in chronic cases vary very much. The most common is menorrhagia. Pain when the bowels act is fairly often present, while the bladder usually escapes unless the uterus is much enlarged. Pain on walking, with bearing-down sensations in the pelvis and fatigue, and a profuse white or yellow discharge, are complained of. Congestion of the uterus to a more or less degree is always present and also endometritis causing leucorrhœa. At any time a local peritonitis may occur and so fix the uterus by adhesions in its unnatural position. Sterility is present in long-standing cases, with perhaps a history of previous abortions. In the early stages conception appears to take place quite readily, but after a time the unhealthy condition of the uterus is no doubt the chief factor in preventing it. Certain reflex symptoms are caused, the most common are nausea and vomiting during and just before menstruation, more rarely headache and chronic dyspepsia.

The ovaries are displaced backwards with the uterus, but here, again, we find great differences. In some the ovaries do not seem to suffer at all, while in others one or both become tender or enlarged and prolapsed, and the seat of permanent changes, the result of traction or torsion of their blood-vessels and pressure from the intestines. Even when the uterus is replaced and kept in position one of the ovaries may be found to drop down into Douglas' pouch and still cause pain, particularly on defæcation. Not unfrequently the ligaments of one ovary become elongated, and thus allow it to fall down into Douglas' pouch, where it can be felt behind the

fundus. Thus incarcerated and pressed on by the uterus it gives rise to much pain. It is extremely tender, and makes marital relations almost impossible.

Many of the symptoms before described are common to other forms of disease in the pelvis and an exact *diagnosis* can only be made by a careful bimanual examination.

The patient should have everything constricting the waist loosened or removed. Lying on her back with the knees flexed and the legs drawn up in an easy and unconstrained position, so as to relax the abdominal muscles, the physician will find the cervix pointing upwards and forwards, and from this point will be able to trace the cervix into the body of the uterus to the fundus as it lies behind the posterior vaginal wall. With the left hand over the abdominal wall he will be able to assure himself of the absence of the fundus from its usual position behind the pubes or further back. The swelling in Douglas' pouch will also be very tender if it is the fundus; but it is also tender when due to perimetritis (see fig. 26).

Other conditions may simulate retroversion (see fig. 24). A local perimetritis filling Douglas' pouch and adherent to the posterior wall of the uterus sometimes exactly simulates the fundus, and may deceive the most experienced unless the uterus is found bimanually through the abdominal wall in its proper place. The sound in all doubtful cases should be passed if pregnancy can be eliminated. The position of the uterus is then revealed with certainty; nor is there the least risk in doing this if *the sound is aseptic and no force used.*

By the same means the diagnosis can be made from other conditions that may appear like the fundus in Douglas' pouch, such as a hæmatocele, a small fibroid (see fig. 25) in the posterior wall, or a small ovarian tumour or enlarged tube, or a loaded rectum containing scybala. A hæmatocele is very uncommon and feels softer and more elastic than the fundus (see figs. 24, 25, and 26).

A fibroid feels very hard, as a rule, and is more rounded. A small ovarian tumour usually feels cystic and softer than the fundus and a sulcus can sometimes be felt between it and the uterus. Scybala on pressure receive

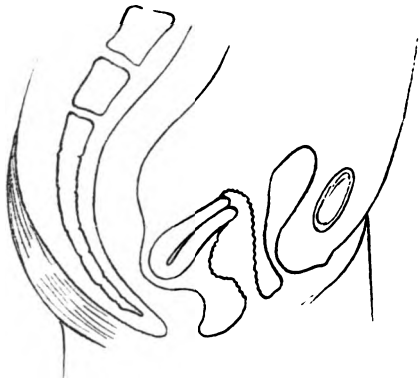


FIG. 24.—Retroversion of the uterus; the fundus pressing on the rectum.

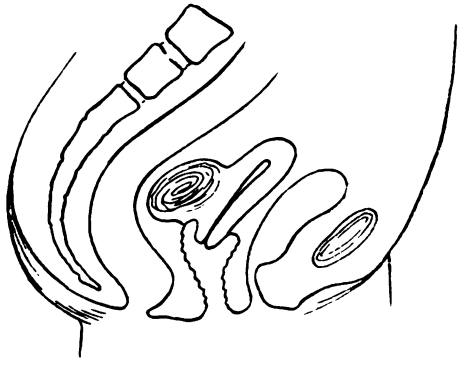


FIG. 25.—Fibroid tumour simulating the position of the fundus in retroversion.

the impress of the finger and can be cleared off with an enema.

Complications.—The prolapse of the ovary with elongation of its ligaments and incarceration below the fundus

has already been described, but in addition to this, it is liable to become fixed by adhesions following on an attack of *perimetritis*. In the same manner the uterus is also liable to form adhesions, so that it becomes fixed in its morbid position and can only be restored by opening the abdomen. More rarely we find the uterus retroverted and with the ovaries and tubes as well bound down by dense adhesions.

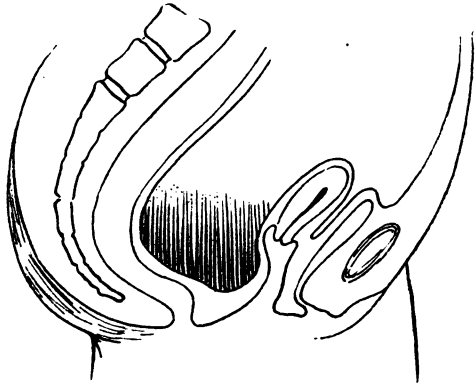


FIG. 26.—An effusion into Douglas' pouch, pushing the uterus and vaginal wall forward.

When CONCEPTION occurs in a retroverted uterus a serious condition arises, because the uterus in this position is unable to expand to the extent required by Nature.

In a small number of cases there is reason to believe that the uterus straightens itself as it expands and spontaneously resumes its normal position. This is not generally the case. If the uterus remains retroverted and the patient is of weak constitution and the embryo wanting in vitality, abortion will occur, before the expansion of the uterus is sufficient to cause severe symptoms. With a woman otherwise healthy this is not the case, and the embryo shows extraordinary tenacity of life,

forcing on the expansion of the uterus in spite of all impediments, and imperilling the existence of other organs, and even the life of the mother, in its efforts to survive.

The *symptoms* depend a good deal on the stage at which the patient seeks advice. The first symptom usually noticed is some pain or difficulty in micturition, from pressure on the urethra. The bladder may be found distended, with constant dribbling of urine; or the bladder may be completely blocked from pressure on the urethra. At the same time there is pain in the bowel and difficulty or inability to empty it. When a case of this kind is unrelieved, cystitis soon begins, with exfoliation of the coats of the bladder, or rupture with extravasation of urine, or uræmia from retention of excretory products. Sloughing of the uterus and septicæmia may follow.

However, as a rule I find patients apply for advice early, sometimes before the bladder is affected. They then complain of a sense of weight in the pelvis and bearing down with pain or discomfort in passing water.

The progress of a case will depend on the stage at which advice is sought, and the presence or absence of adhesions binding down the uterus.

When complete retroversion goes on for any length of time unrelieved it causes congestion of the uterus and enlargement. This is probably due to some compression of the uterine veins, which are in a condition of torsion from the displacement. A white discharge is soon noticed. This goes on increasing and may become yellow and so profuse as to necessitate the daily wearing of a diaper. A condition of chronic endometritis is set up, with great proliferation of the uterine glands and increased vascularity of the endometrium. It is this change which is also the cause of the menorrhagia.

Treatment.—Each case must be considered on its merits, and the treatment will vary according to the conditions found. These may be grouped as follows :—

(1) Incomplete retroversion with intact perineum.

(2) Complete retroversion with intact perineum.

(3) Complete retroversion with torn perineum or dilated vaginal outlet.

(4) The same as No. 3 plus some prolapse of uterus.

(5) Long-standing cases, with profuse discharge and menorrhagia.

(6) Complete retroversion with an enlarged, prolapsed ovary, which remains prolapsed when the uterus is restored to its normal position.

(7) Retroversion, with adhesions binding the uterus down, so that all attempts at reposition fail.

(8) Retroverted gravid uterus.

(1) The first group of cases, consisting of *incomplete retroversion with intact perineum,* can generally be restored without the use of a pessary. The general health must be attended to. If anæmia is present iron should be given, and a daily evacuation of the bowels must be secured. Fresh air and moderate exercise, with the daily use of an astringent douche, will, in most cases, affect a cure. The assumption of the genupectoral position for half an hour morning and evening and lying on the face as much as possible help matters considerably. When these measures fail a properly fitting Hodge pessary should be worn for a time, if the patient is married. In single women it is better to avoid the use of any pessary, unless, as in some of the other groups to be described, the sufferings of the patient outweigh the objections to its use.

(2) Second group, consisting of *complete retroversion and flexion without ruptured perineum or dilated vaginal outlet.* The same attention must be given to the general health as before described.

When the pelvic floor is in good condition there is not much difficulty in restoring the patient to health.

The first thing to do is to replace the uterus. There are a variety of ways of doing this.

For those who are expert in the use of the sound

there is nothing to equal it. Pregnancy must first be excluded. The sound must be thoroughly aseptic. No force must be used in passing it. The patient is placed on her side in Sims' position, with the buttocks over the side of the couch. When retroflexion is well marked the difficulty of passing the sound can be overcome by increasing the usual curve and carrying the handle well up to the pubes. As soon as it is passed the full distance the handle is slowly rotated until the curve looks forwards to the pubes, the handle is then slowly drawn backwards until it touches the perineum; the point of the sound carrying the fundus with it is then in the normal position of the uterus behind the pubes.

Personally I find this the simplest, least painful and most efficient way of replacing the uterus, and the presence or absence of adhesions is at once revealed.

Another method is to place the patient in the genu-pectoral position, and with a Sims' speculum open the vaginal outlet so as to let atmospheric pressure act on the uterus. This, together with the relaxation of the abdominal muscles and gravity acting on the fundus, will help the replacement. Further assistance is given by passing two fingers, or a tampon on a sponge-holder, along the posterior vaginal wall and making pressure on the fundus.

A third method is to place the patient in Sims' position and open the vagina with Sims' speculum. The anterior lip of the cervix is then seized with a volsella or tenaculum forceps and the speculum is withdrawn. The cervix is now pushed backwards into position with the volsella, while a finger in the rectum, or a sponge-holder with tampon in the vagina, puts pressure on the fundus and pushes it upwards.

Having replaced the uterus, a pessary must be fitted to keep it in position. The best shape to use is that known by the name of Hodge. In order to be successful, the practitioner must realise that there are great differences in women in the size, shape and tone of the

vagina and perineum. The pessary which will suit one woman is utterly useless to another. Further than this, the pessary which, at first, is most suitable for keeping the uterus in position may be unsuitable after the vagina and uterine ligaments have recovered their tone. On this account it is best to fit at first a soft metal pessary, which can be easily bent into any shape required. After a month or so, when the vagina and ligaments have recovered their tone, one can be moulded in vulcanite. This material is by far the best to use, as it is almost impervious to any action by the vaginal secretions.

After the uterus has been replaced, the examining finger should be used to measure the length of the vagina, its approximate width and size of outlet. Some cases require a long narrow pessary, pointed towards the outlet; others require a wide short pessary. When the perineum is not strong and the vaginal outlet can be easily stretched, the lower end should be made broader, so as to prevent it from slipping out. Of the two curves in a Hodge pessary, the posterior, which passes behind the cervix and puts tension on the posterior vaginal wall, should be longer than the anterior. It should also be more curved than the anterior bend, but not too much, or it will fail to act to the best advantage. Too marked a bend is apt to press unduly on the rectum and cause some pain on defæcation, and is not so efficient in keeping the uterus in position. The reason is that a Hodge pessary acts chiefly by pushing upwards and backwards the posterior vaginal wall, the latter in its turn draws the cervix backwards and throws the fundus forwards. If the Hodge is too much curved it fails to put enough tension on the posterior vaginal wall. The pessary should only touch the lateral vaginal walls. It is better to shape it narrow than too wide, but if it is too narrow and too small it may alter its position and be found across the pelvis, and therefore inefficient for retroversion. When a pessary fits properly the vaginal walls can be felt to grip it without being

distended, and the examining finger can be passed all round it by putting the vaginal walls on the stretch. The patient should not be conscious of having anything in the vagina if the pessary fits her properly. She must be impressed with the necessity of using the douche every day, with some antiseptic (see p. 23) in the water, as long as the pessary is worn. Instructions should be given to avoid any strain or active exercise for a time until the ligaments have recovered their tone, also to avoid lying on her back; the knee-chest position should be assumed for fifteen minutes, two or three times a day. Within a day or two the patient should be seen and examined, and any tendency of the uterus to go over must be corrected.

Schultze's figure-of-eight pessary is, in my opinion, not so efficacious as a Hodge. The chief objection to its use is that it drags the cervix back instead of the posterior vaginal wall. When the uterus is flabby this simply emphasises the retroflexion.

If the uterus still persists in going over after these measures have been carried out, it will be necessary to keep the patient in bed, lying on her face as much as possible, after the uterus has been replaced. With careful attention to the general health, the use of tonics, massage, and astringent douches, the ligaments will recover their tone, and in the course of a week or two the patient may be allowed to get up. She should then be encouraged to take gentle exercise, short of fatigue, in the fresh air. After the uterus has kept its position for a month or two the amount of exercise can be greatly increased; after six months, bicycling, and even riding on horseback, in strict moderation, can be allowed. The increased circulation through the pelvis produced by exercise in the fresh air, short of strain or fatigue, acts better than anything else in restoring the tone of the uterine ligaments, provided the uterus keeps in position with the Hodge pessary. The best of all exercises is, in my experience, cycling in *strict moderation*.

It is best for the patient to give up marital relations for a few weeks. When the uterus keeps up they can be resumed. As a rule the Hodge pessary causes no inconvenience in this respect.

When, as rarely happens in uncomplicated cases, the uterus cannot be kept in postion by ordinary measures, or the patient prefers an operation to wearing a pessary, the choice will lie between ventrosuspension and Alexander's operation.

Most patients will ask how long they will have to wear a support. The answer to this question is based on a number of factors. The age, general health, mode of life, local condition and tonicity of vaginal walls and perineum must all be taken into account. In favourable cases a few months may be sufficient, while others may have to wear a pessary for years.

Cases will sometimes occur where from weakness of the general health the uterus persists in falling back in a few days, or maybe weeks, after replacement. By perseverance on the lines indicated these cases can usually be put right. When after some months it is found that the uterus still flops back as at first, on the least provocation, the best thing to do is a ventrosuspension (see p. 79).

In order *to introduce a pessary* with the least pain to the patient direct her to lie on the left side in Sims' position, with the buttocks projecting over the edge of the couch. Having well oiled the pessary, grasp the lower end between the finger and thumb of the right hand, separate the labia with the first and second fingers of the left hand. If the vaginal orifice is small hook back the fourchette and at the same time press back the perineum. Then push the pessary backwards in the axis of the vagina until it is either half or entirely within the vagina. The index finger is next passed behind the pessary until it rests on the upper end; by this means it is hooked under the cervix and carried on until the upper end lies snugly in the posterior fornix.

Every pessary should be removed in order to be thoroughly cleaned and disinfected every month or two months. Some patients can wear a pessary much longer than others without irritation being caused by its presence.

When pregnancy occurs the Hodge can be removed at the end of the fourth month, but not before.

(3) *Cases of Complete Retroversion with Ruptured Perineum or Dilated Vaginal Outlet.*—Under these circumstances the vagina is unable to hold the lower part of a Hodge pessary in position, it consequently fails to keep the uterus up and the pessary is, in fact, usually expelled within a short time of its introduction. The proper treatment is to restore the perineum to its normal condition by operation (see p. 43). During the rest in bed which follows and the use of the genu-pectoral position the uterus may be induced to keep in place without further treatment. If not, a Hodge pessary can then be used as before described with advantage.

It sometimes happens that a patient with ruptured perineum refuses to be operated on. Under these conditions an india-rubber ring pessary may be found to answer better, or the anterior portion of the Hodge can be made much wider than usual so as to help its retention in spite of enlarged outlet, and the curve can be altered so as to bring it more under the pubes.

(4) *Complete Retroversion with some Prolapse.*—This condition is very often met with and must be treated according to the amount of prolapse associated with the retroversion. When the former is slight and the latter pronounced, the use of the Hodge pessary while keeping the uterus from becoming retroverted will also sustain it and prevent any increase in the prolapse, provided the vaginal outlet is capable of holding the pessary in position. If pessaries fail, resource can be had to the operation of ventrosuspension (see p. 79) ; by this means the retroversion is cured, and the prolapse also if it has not gone too far.

If the prolapse is the predominant factor and overshadows the retroversion and a pessary fails to keep the uterus in position, recourse must be had to other measures (see chapter on Prolapse).

(5) *Chronic Cases of Retroversion with Menorrhagia and Profuse Leucorrhœa.*—The uterus under these conditions is generally enlarged by the chronic congestion, and associated with this is endometritis. The patients are much weakened by menorrhagia and are consequently more difficult to treat successfully. Some specialists begin by curetting the uterus, but I do not advise it until the uterus is restored to its normal position. This is far more difficult to do in a chronic case than in a recent one. In fact, after the uterus has been retroverted for some years the ligaments almost appear to have become set in their abnormal position. There may, under these conditions, be so much resistance felt in replacing the uterus that the existence of adhesions is suspected, but they are not always verified if an operation is done. However, with perseverance on the lines already described (see p. 67) the uterus can generally be kept eventually in position. When this has been achieved it will be found in a large proportion that the congestion and weight of the uterus go away, and also the menorrhagia and discharge. Should these symptoms persist after the uterus has been kept up for two or three months it is then advisable to curette. Occasionally a case will occur where the menorrhagia persists in spite of curetting. Something has to be done to prevent the constant drain at every menstruation. With one exception I have been able to control the loss by the use of the constant curette, and thus save the patients from removal of the appendages or hysterectomy.

The method of treatment is as follows: A Stohrer hospital battery of forty cells is used, with a galvanometer in the circuit. The patient is placed on her side and a platinum electrode insulated to within an inch of its extremity is passed up to the fundus, so that the current

passes through the endometrium of the body of the uterus, while that portion of the electrode within the cervix is insulated. Unless this point is attended to the treatment fails. The hæmorrhage comes from the body of the uterus, so the hæmostatic effect of the electrolysis must be applied directly to it and not to the cervix.

The electrode is then connected by a wire to the positive pole of the battery. The patient is gently turned on to her back. Either a nurse must now hold the electrode to prevent it from being expelled and slipping out of the uterus, or a weight must be placed against the end to achieve the same object. The abdominal wall is now bared and on it is placed a large pad of soft clay, on this again is placed a round metal electrode with a handle attached by the negative pole of the battery. The current is slowly raised until 50 to 100 milliampères are registered by the galvanometer. The application lasts for fifteen minutes and should be given twice a week. As the patient becomes more accustomed to the electricity the strength of the current can be raised to 100 milliampères. The number of applications varies according to the case and may amount to anything between fifteen and thirty. Sometimes there is no improvement until after the treatment is completely finished. While it may take two or three months more before menstruation becomes normal. While electricity has the merit of saving patients from operation, it has the disadvantage of being tedious to the patient and takes up much of the physician's time.

Complete removal of the ovaries and tubes will cause cessation of menstruation, provided there is no adenoma or other tumour in the uterus. This operation is preferable, in my opinion, to hysterectomy. When there is no tumour there is less shock and the after-results are better.

(6) *Complete Retroversion with Prolapsed Ovary.*—As a rule, when the uterus is replaced the ovaries go up with it into their normal position. This is not always the case, and we sometimes find one ovary larger than normal

lying in Douglas' pouch after the uterus is replaced. It is always very tender and sensitive to pressure and makes the use of a pessary difficult. An india-rubber ring answers better than any other, but it is not so good as a Hodge for keeping up the uterus. A Hodge covered with india-rubber, with a glycerine pad at the upper end so as to make a soft cushion to push up the ovary, answers fairly well. Usually in these cases the only satisfactory treatment is to open the abdomen, remove the one ovary, and attach the fundus to the abdominal wall. Then the necessity for a pessary is done away with. In these days of aseptic surgery the risk from such an operation is very slight : I have never lost a case myself. It does not take long to do in the hands of an expert, and there is practically no shock from it. (For details of operation see p. 79.)

(7) *Retroversion with Adhesions Binding the Uterus down.*—These cases occur as the result of pelvic peritonitis. They vary in severity through wide limits, from a few easily separated adhesions to dense fibrous bands. The treatment to be adopted depends on the case. When the condition is complicated by diseased appendages there is only one thing to be done : open the abdomen, remove such of the appendages as are diseased, leave one or both ovaries, if possible, and stitch the uterus to the abdominal wall.

If the appendages are normal, then an opinion must be arrived at as to the duration and amount of the adhesions. If recent, it may be possible to produce absorption by appropriate treatment.

The history will guide us to a great extent on this point. An estimate can be formed of the extent and toughness of the adhesions, when the sound is passed, by noticing what amount of resistance is felt on trying to replace the uterus with the sound.

If the adhesions are only slight, some specialists advise putting the patient under chloroform, and by manipulations breaking or stretching the adhesions, and then

keeping the uterus in place with a pessary. My own experience is that patients rarely come early enough to enable this to be done. It is also doubtful whether it is good practice. There are very often adhesions to the bowel, and forcible stretching of these in the dark might cause rupture of the coat of the bowel, with disastrous results.

If the uterus cannot be kept in place by the means already described, and *the symptoms are well marked*, the best thing to do is to open the abdomen and do a ventrosuspension (see p. 79). It is well to remember that when there has been *extensive* pelvic peritonitis no operation will repair the damage originally done. Although the patients become better and suffer less pain and discomfort, they do not always entirely recover their health. This is particularly the case with those of weak constitution and tubercular or neurotic diathesis.

(8) *Retroverted Gravid Uterus.*—Those patients who suffer from chronic retroversion are usually sterile, because the endometrium is in an unhealthy condition consequent on chronic congestion. But in the early stages it is quite possible, and it is not infrequent, for pregnancy to occur. Occasionally the uterus will retrovert after conception has occurred.

The *symptoms* vary in different cases. The most common is a complaint of some difficulty in passing water. This is produced by the pressure of the cervix on the urethra, and may go on to complete obstruction and retention with distended bladder. At the same time the fundus presses on the rectum, causing pain in defæcation, constipation, or complete obstruction.

The variation in symptoms depends on the vitality of the embryo and also on the stage at which the patient seeks advice. In feeble women and an embryo deficient in vitality, actual retention does not usually take place, because abortion occurs before the expansion of the uterus is sufficient to do much harm. On the other hand, when the woman and the embryo are both

vigorous, the uterus will continue to expand in spite of its confinement in the pelvis and will go on until the life of the patient is in jeopardy. The retention of urine, if unrelieved, may cause rupture of the bladder, with extravasation and fatal peritonitis, or severe cystitis with exfoliation of the mucous membrane of the bladder. Uræmia may occur from retention of the urinary elements. Death from this cause is rare, most patients coming for relief before this could occur. The worst cases are those where the uterus is bound down by adhesions and the patient fails to come soon enough for relief. Cases have been described of the uterus spontaneously rising in the pelvis and thus rectifying its own malposition; but we can never rely upon this.

The *diagnosis* is not difficult. On examination *per vaginam*, a smooth, round, elastic swelling is found behind the posterior wall, while the cervix is high up behind the pubes. Bimanually the absence of the fundus from its normal position can be made out. The cervix feels softer than usual. A history of amenorrhœa and the other signs of pregnancy, with some difficulty in passing urine, make the diagnosis fairly certain.

Treatment.—This will, of course, depend on the case, and the stage at which relief is sought. The majority of patients have retroflexion without adhesions and seek advice as soon as there is difficulty in passing water. There should be no delay in taking the case in hand, because every day adds to the size of the uterus and increases the difficulty of replacing it.

The first thing to be done is to empty the bladder. Sometimes, on account of the pressure on the urethra, there is a difficulty in doing this, but I have always found that a small male gum elastic catheter on a stilette could be passed. This is followed by a copious enema, so as to clear out the lower bowel. The vagina should then be douched thoroughly with an antiseptic. An empty pear-shaped india-rubber bag is introduced as far up the vagina as possible behind the retroverted fundus.

Attached to the bag is some tubing and a stopcock; a small brass pump is made to fit this. The tap is turned so as to admit air into the tubing and bag. By the use of the pump the bag begins to expand until it fills the vagina and presses on the uterus. The amount of expansion should be such that the finger can be passed between the vaginal wall and the bag by using slight pressure. The tap in the tubing is then turned off so as to close the opening. The patient is put to bed and the bag left in for twenty-four hours or longer if necessary. During this time the bladder will require to be emptied with a catheter. If the bag is distended too much it might possibly cause sloughing, particularly if water is used instead of air. The former offers no advantage over the latter, and being inelastic is not so safe as air. In every uncomplicated case where I have used this treatment the uterus has risen into the pelvis within twenty-four hours without abortion coming on, and there has been no further trouble.

If the uterus fails to go up after forty-eight hours I should have no hesitation in saying that there are adhesions holding the fundus down, unless the patient had delayed coming for some weeks after the onset of the first symptoms, then the uterus might be too large to go up under any pressure from below; or there might be peritonitis with extensive exudation gluing the uterus and intestine and bladder together.

When the air-bag fails it is only waste of time to give chloroform and attempt reposition with the hand in the vagina or rectum. There must be no hesitation about operating at once; if the patient is left unrelieved death will in all probability follow from acute cystitis, peritonitis, or uræmia.

We then have the choice of two measures, abdominal section or the production of abortion. Provided the patient is in fairly good condition, and aseptic measures can be carried out, there can be no doubt in these days of successful abdominal surgery that the proper treat-

ment is to open the abdomen; any adhesions that are found are carefully divided. The fundus uteri can be brought up into position by manœuvring it to one or the other side of the sacral promontory. The abdomen is then closed in the usual way. If the patient has not delayed too long in coming for relief the operation is not followed by abortion.

When the case has been neglected and peritonitis is present, with lymph gluing the intestines together, these must be carefully separated or a tear in the bowel may be made. The pelvic cavity may with advantage be washed out with some boracic lotion, 1 in 30, after the uterus has been got up into position, or with normal saline solution.

The bladder must be regularly emptied every six hours with a catheter and then washed out with warm boracic lotion. Five to ten grains of urotropin can be given three times a day if the urine is offensive.

When the patient and friends will not consent to abdominal section a sound should be passed into the uterus, so as to puncture the membranes and produce abortion. If the operator is not sure of having done this, a soft bougie is passed up to the fundus and tied in for twenty-four hours, or longer if necessary, until the uterus begins to expel its contents.

Several deaths have been published in the medical papers from this condition. Many of them occurred from procrastination. The uterus will in most cases go up of itself, if the bladder is kept emptied, in the course of a week or two when there are no adhesions; but we must remember, on the other hand, that there may be adhesions, and while we are waiting the patient is getting steadily worse, and less able to stand the inevitable operation. In every case, therefore, I make it a rule to apply the elastic bag, as before described, at once. In the course of a day or so the uterus, when there are no adhesions, is restored to its place. The advantage of this treatment is obvious, because it reveals to us

within a day or two whether we have to deal with a complicated case or not.

When the uterus will not go back under this treatment, there should be no hesitation in doing abdominal section, provided aseptic surroundings can be obtained. Failing this, abortion should be brought on. It is bad treatment to watch a patient for two or three weeks, getting steadily worse, in the hope that the uterus may go up of itself, and then to operate at the last minute, and probably too late to save life.

CHAPTER VI.

(*a*) The Operation of Ventrosuspension of the Uterus.

When there is a slight degree of prolapse with marked retroversion and retroflexion, this is by far the best operation, if the abdominal wall is strong enough.

There is practically no risk about it, provided that perfect aseptic surroundings are obtained. Unless the operator has good reason to know this can be ensured the operation simply for uncomplicated retroversion is unjustifiable.

Before undertaking this in a private house ascertain that the drains are in good order and the water supply uncontaminated. I have, on more than one occasion, found a dead rat in the cistern. The room in which the operation is to take place should have a good light. The carpet must be taken up, and all curtains, pictures and hangings removed, and all unnecessary furniture. The floor must be thoroughly washed with soap and lysol, and also the paint and the walls as well. Pads and swabs made of cotton-wool, enclosed in gauze, may be used instead of sponges. These, with the towels required and the operator's robe, and also the instruments, must be properly sterilised by heat just before the operation.

Any nurse or doctor helping or present should give an undertaking that they have not been near any infectious case for some weeks.

The operator and the *nurses* must carefully sterilise their hands. For this purpose I find that a solution of

perchloride of mercury in half methylated spirit and half water (1 in 2,000) answers admirably. After scrubbing the hands thoroughly with a nail-brush and soap in warm water they are soaked in this solution for five to ten minutes.

The patient should be given a perchloride bath, 1 in 5,000, on the morning of the operation. The skin of the abdomen is well washed with soap and water and the hair over the pubes is shaved the day before. A compress soaked in a solution of perchloride of mercury, 1 in 2,000, half alcohol and half water, is placed over the abdomen for twelve hours before the operation. All the nurses and assistants should wear sterilised india-rubber gloves, the operator also, if there is the slightest doubt about the aseptic condition of his hands.

Over night an aperient is given, sufficient to produce an action of the bowels. It is best to let the patient take whatever she has found to suit her best. This is followed in the morning by an enema of soap and water, so as to thoroughly evacuate the bowels.

The operator should prepare his own sutures, by thoroughly boiling them for half an hour the day before. They are then transferred to aseptic glass receptacles containing 1 in 20 carbolic. Just before the operation the carbolic is emptied out and replaced by sterilised water.

The abdomen is opened in the middle line between the umbilicus and the pubes for two or three inches, according to the manipulative skill of the operator. The lower end of the incision reaches to within one inch of the pubes, so that quite half the incision is subsequently covered by the pubic hair. The first incision should go through the skin and subcutaneous tissues, the second divides the fascia and cuts through the muscle beneath without any attempt to find the dividing line between the recti. The muscle is then separated by the fore-finger of each hand and the subperitoneal tissue is seen below. The assistant takes up the side nearest to him with forceps, while the operator does the same on his

side and divides the tissue gradually between the forceps until a small hole through the peritoneum is perceived. A finger is pushed through and the rest of the peritoneum and subperitoneal tissues are cut through with a pair of sharp scissors, to the same length as the first incision. Before doing this, the assistant with one finger and the operator with another hook up the abdominal wall, so as to avoid injury to the intestines or omentum underneath. If any vessels are still bleeding in the incision they are caught up with forceps, but as a rule they soon stop bleeding from the effect of pressure alone, if they are given a nip with pressure forceps.

The first and second fingers are now passed into the abdomen and the appendages and uterus are thoroughly examined. Any adhesions which prevent the uterus from coming up into position are divided. When these are at all extensive, or deep down in the pelvis, it is best to enlarge the incision so as to see the points of adhesion. Whenever the omentum is adherent it should be tied near the adherent end, otherwise it is almost sure to go on bleeding. When the intestines are found to be adherent a line of separation can generally be found on careful inspection, if traction is made to draw it away from the point of adhesion. The division of these adhesions must be very carefully done with scissors or scalpel, so as not to tear the intestinal walls. When the appendages are diseased they are usually found to have fallen back and lie on the posterior wall of the broad ligament or uterus, and most likely fixed by adhesions in this position.

Before any attempt is made to remove the diseased appendages they must be freed from adhesions and brought up into the wound so as to form a pedicle, which can be tied off. In order to do this, two or three fingers of the left hand are passed down behind the uterus until the points of the fingers come under the adherent tube and ovary. A line of cleavage can usually be felt, and this is worked at until the separation is affected. Very often the ovary is quite buried under

the Fallopian tube. In severe cases the whole appendage is buried under adherent intestines, so that when the abdomen is opened there is nothing to be seen but the fundus uteri and intestines. Under these circumstances the operation may be distinctly difficult, especially if there is a pyosalpinx or an abscess in the ovary.

In other cases it may be necessary to remove a prolapsed and enlarged ovary. This is brought up into the wound; the pedicle needle armed with a double piece of silk of medium thickness is passed through the broad ligament at a point about its middle where the anterior and posterior layers coalesce. An assistant takes hold of the silk and the pedicle needle is withdrawn. The operator can then either tie a figure-of-eight loop, or divide the silk and tie both sides with an interlocking ligature. In all cases it is good practice to tie round the whole a reinforcing ligature. The ovary can then be cut away, taking care not to go too near the silk. When the operator is tying his ligature the assistant should relax the pedicle, as it is then less liable to slip afterwards.

In all cases where the appendages are diseased one ovary should, if possible, be left, particularly in young women, even if it is not quite sound. It may recover when freed from adhesions, or it may become worse and have to be removed subsequently. The next step is to suspend the uterus and the abdominal wall. There are various ways of doing this. Some operators attach the front of the uterus, some the fundus, and some the posterior wall. The number and material used for the sutures also varies. Another point is whether they should include the aponeurosis or only the peritoneum and subperitoneal tissues, as advocated by Kelly. My own experience is in favour of the fundus uteri with two sutures, one in the middle line and the second half an inch behind on the posterior surface. If there is any prolapse or if the patient is very thin and has very little subperitoneal tissue these sutures should also include the

aponeurosis. In young women with no prolapse I find it is sufficient to include the peritoneum and subperitoneal tissue. In fat women it is also advisable to include only the peritoneum and subperitoneal tissues (see figs. 27 and 28). The advantage of this is that the uterus can easily expand if pregnancy follows soon on the operation. In any case if silk is used it is eventually absorbed and nothing remains but the knot and two adhesions between the uterus and peritoneum. These adhesions usually lengthen to one or two inches and thus allow practically a normal amount of mobility to the uterus. So far I have not found any difficulty follow on the patient becoming pregnant when the uterus has been suspended in this way, nor have I known any of the cases to relapse, probably because the uterus is held in its proper position of slight anteversion.

The sutures are passed as follows: One of Bonney's half-curved needles held in a pair of forceps and threaded with thin silk is passed through the aponeurosis, subperitoneal and peritoneal tissues one-third of an inch from the edge of the incision and two and a half inches from the pubes. The fundus uteri is then pulled up into the wound by the finger and thumb of the left hand and the needle passed through the substance of the uterus exactly on the summit of the fundus for a distance of two-thirds of an inch. Taking the needle again in the forceps, it is passed through the peritoneum and aponeurosis of the opposite side. The first suture is then in position and serves to hold the uterus up while the second is passed in a similar way, except that it pierces the uterus half an inch behind the first and on the posterior wall. The peritoneum in the upper part of incision is now united with fine silk. The two sutures holding the uterus are then tied, but not too tightly, and the rest of the aponeurosis is united with silkworm gut. The skin incision is brought together with a continuous suture of fine silk, and the operation is complete. It is absolutely necessary to have the silk sutures thoroughly sterilised. They should

be boiled for half an hour and then placed in a solution of 1 in 20 carbolic acid until required. At the time of operation the silk is put into sterilised water so as to wash out most of the carbolic acid. For private cases I do this myself so as to make quite sure.

Patients very often have more pain after this operation for the first two days than one would expect. If removal of diseased and adherent appendages has also been necessary the pain is very severe and more than occurs after a big ovariotomy or hysterectomy. A morphine suppository repeated once or twice during the first forty-eight hours is a great comfort, and in my experience has done no harm. The method of attaching the uterus to the peritoneal and subperitoneal tissues can be better understood by reference to figs. 27 and 28. After the operation the patient should be kept in bed for quite a fortnight and may then be allowed to sit up for half an hour, but not to stand about or go downstairs before a month is up. No active exercise or exertion of any kind beyond driving in a carriage or gentle walks should be allowed for three months. By that time the adhesions are usually firm enough to hold the uterus securely.

(*b*) Intraperitoneal Shortening of the Round Ligaments.

The main principle of this operation is to fold the round ligament on itself and shorten it by stitching the duplication together. Either a single or a double fold can be made; the former is the best in my opinion because the amount of shortening can be graduated as required.

The operation is done as follows: The abdominal wall is incised in the usual way in the middle line for two to three inches, the lower end of the incision ending half an inch above the pubes. As soon as the peritoneum is opened a careful examination is made of the uterus and appendages. Any adhesions holding the

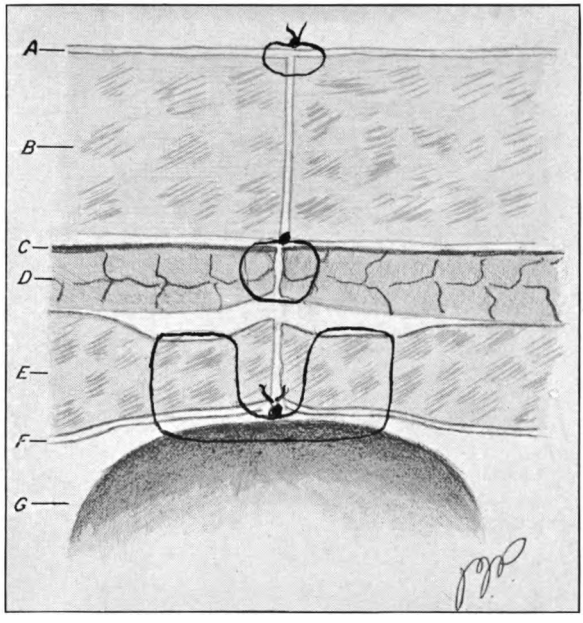


FIG. 27.—Showing the position of sutures for ventro-suspension in fat subjects. *A*, skin; *B*, subcutaneous fat; *C*, aponeurosis; *D*, rectus muscle; *E*, subperitoneal fat; *F*, peritoneum; *G*, fundus uteri.

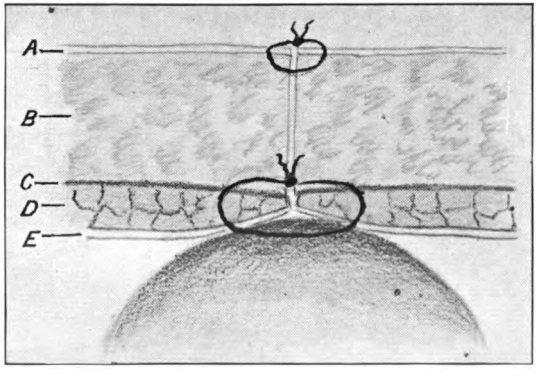


FIG. 28.—Showing position of sutures for ventro-suspension in thin subjects. *A*, skin; *B*, Subcutaneous fat; *C*, aponeurosis; *D*, rectus muscle; *E*, peritoneum.

uterus down are separated until it can be brought up into its normal position. If the appendages are found to be diseased they are removed in the usual way (see p. 82). An assistant with one or two fingers behind the fundus supports it in position while the operator takes up the round ligament with his finger and thumb and draws it up into the wound. The centre of the portion to be shortened is then seized and drawn out by forceps so that a duplication is formed. At this point close to the forceps a continuous or separate suture is commenced, passing through the peritoneum and the substance of the reduplicated ligament. As soon as enough has been taken up to hold the uterus in good position the suture is tied off in the usual way. The best material for the suture is thin silk or silkworm gut. The round ligament on the opposite side is then treated in the same way and the abdominal wound closed in the manner already described (p. 83).

(*c*) The Relative Value of Ventrosuspension and Alexander's Operation and Shortening of the Round Ligaments.

When we are unable to keep the uterus in position, and there is marked retroversion with backache, bearing-down, and inability to carry on the duties of life, the choice will lie between these operations. Each has its advantages and disadvantages, of the three I prefer ventrosuspension, and for the following reasons: Opening the abdomen enables us to make a thorough examination of the pelvis and correct any minor defects, such as slight adhesions too small to be made out bimanually, but yet enough to keep up pain if left *in situ*, as they would be after Alexander's operation. The risk of opening the abdomen under modern aseptic conditions is so very slight now that it need hardly be considered. So far I have never lost a patient by this operation.

In considering the after-results it is necessary to have a clear conception of the difference between ventrosuspension and ventrofixation. When the former is done for retroflexion it is only necessary to pass one or two silk sutures through the uterus in order to keep it in place. These silk sutures in time are absorbed and leave a slight adhesion to the abdominal wall. Should the patient become pregnant these adhesions can stretch and do not interfere with the expansion of the uterus; but it is very different when ventrofixation has been done and extensive adhesions formed with a broad area of attachment; for there will then certainly be trouble if pregnancy occurs. The statistics bearing on these operations have been mixed up. If we take cases of ventrosuspension by themselves we find it very rare for any complication to arise. None of my cases so far have had any trouble that I am aware of. Nor have I had any cases where the displacement has recurred after operation.

The advantages of Alexander's operation are that the abdomen is not opened, so there is no scar and the uterus can expand. On the other hand, the round ligaments having once stretched may do so again. The presence of adhesions may make it difficult to draw out the round ligaments, and even if this is possible the tension of the adhesions would gradually pull the uterus back again. Sometimes the round ligament is not strong enough and breaks on traction. The operation may weaken the inguinal canal and be followed by a hernia.

Intraperitoneal shortening of the round ligaments is in some respects better than Alexander's operation. The uterus and appendages can be examined and adhesions separated. There is no difficulty in finding the round ligament and no risk of its breaking. As the shortening is done by a reduplication of the ligaments on themselves, the peritoneum is included and helps to strengthen them. The nutrition of the ligaments is not interfered with.

The operation of vaginal fixation has so many draw-

backs, that I do not recommend it. In the first place the uterus is changed from one abnormal position to another and symptoms of anteversion are substituted for those of retroversion. If pregnancy occurs, the uterus as a rule cannot expand. The cervix is displaced so far back, it is almost impossible to dilate it.

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